

## Connecting via Winsock to STN

Welcome to STN International! Enter x:x

LOGINID: ssspta1201txs

PASSWORD:

TERMINAL (ENTER 1, 2, 3, OR ?):2

10/714,378

NEWS WWW            CAS World Wide Web Site (general information)

Enter NEWS followed by the item number or name to see news on that specific topic.

All use of STN is subject to the provisions of the STN Customer agreement. Please note that this agreement limits use to scientific research. Use for software development or design or implementation of commercial gateways or other similar uses is prohibited and may result in loss of user privileges and other penalties.

FILE 'HOME' ENTERED AT 13:35:00 ON 15 MAR 2005

=> file caplus  
COST IN U.S. DOLLARS  
SINCE FILE  
ENTRY  
TOTAL  
SESSION  
0.21  
0.21  
FULL ESTIMATED COST

FILE 'CAPLUS' ENTERED AT 13:35:14 ON 15 MAR 2005  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in searching databases on STN. Any dissemination, distribution, copying, or storing of this information, without the prior written consent of CAS, is strictly prohibited.

FILE COVERS 1907 - 15 Mar 2005 VOL 142 ISS 12  
FILE LAST UPDATED: 14 Mar 2005 (20050314/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s 11 and catalyst  
682843 CATALYST

10/714,378

686497 CATALYSTS  
875314 CATALYST  
(CATALYST OR CATALYSTS)  
L2 10764 L1 AND CATALYST

=> s 12 and support?  
702200 SUPPORT?  
L3 672 L2 AND SUPPORT?

=> s 13 and salt  
734427 SALT  
571572 SALTS  
1094362 SALT  
(SALT OR SALTS)  
L4 68 L3 AND SALT

=> s (epoxide or ethylene oxide)  
45095 EPOXIDE  
26043 EPOXIDES  
58832 EPOXIDE  
(EPOXIDE OR EPOXIDES)  
497175 ETHYLENE  
3328 ETHYLENES  
498641 ETHYLENE  
(ETHYLENE OR ETHYLENES)  
1543367 OXIDE  
325032 OXIDES  
1636392 OXIDE  
(OXIDE OR OXIDES)  
64567 ETHYLENE OXIDE  
(ETHYLENE (W) OXIDE)  
L5 121102 (EPOXIDE OR ETHYLENE OXIDE)

=> s 15 and catalyst  
682843 CATALYST  
686497 CATALYSTS  
875314 CATALYST  
(CATALYST OR CATALYSTS)  
L6 19396 L5 AND CATALYST

=> s 16 and support?  
702200 SUPPORT?  
L7 1381 L6 AND SUPPORT?

=> s 17 and salt  
734427 SALT  
571572 SALTS  
1094362 SALT  
(SALT OR SALTS)  
L8 176 L7 AND SALT

=> s 18 and metal  
1557112 METAL  
790545 METALS  
1889460 METAL  
(METAL OR METALS)  
L9 77 L8 AND METAL

=> s 19 and alkali

10/714,378

386857 ALKALI  
4241 ALKALIS  
31352 ALKALIES  
406807 ALKALI  
(ALKALI OR ALKALIS OR ALKALIES)

L10 39 L9 AND ALKALI

=> s 18 and alkali metal salt

386857 ALKALI  
4241 ALKALIS  
31352 ALKALIES  
406807 ALKALI  
(ALKALI OR ALKALIS OR ALKALIES)

1557112 METAL  
790545 METALS  
1889460 METAL  
(METAL OR METALS)

734427 SALT  
571572 SALTS  
1094362 SALT  
(SALT OR SALTS)

22990 ALKALI METAL SALT  
(ALKALI (W) METAL (W) SALT)

L11 9 L8 AND ALKALI METAL SALT

=> dup rem 111 19

PROCESSING COMPLETED FOR L11

PROCESSING COMPLETED FOR L9

L12 77 DUP REM L11 L9 (9 DUPLICATES REMOVED)

=> d 112 ibib hitstr abs 1-77

L12 ANSWER 1 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:718412 CAPLUS

DOCUMENT NUMBER: 141:245542

TITLE: Composite materials comprising **supported** porous gels

INVENTOR(S): Childs, Ronald F.; Filipe, Carlos; Ghosh, Raja; Mika, Alicja M.; Zhou, Jinsheng; Komkova, Elena N.; Kim, Marcus; Dey, Tapan K.

PATENT ASSIGNEE(S): McMaster University, Can.

SOURCE: PCT Int. Appl., 146 pp.  
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004073843	A1	20040902	WO 2004-CA120	20040129
W: AE, AE, AG, AL, AL, AM, AM, AM, AT, AT, AU, AZ, AZ, BA, BB, BG, BG, BR, BR, BW, BY, BY, BZ, BZ, CA, CH, CN, CN, CO, CO, CR, CR, CU, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EC, EC, EE, EE, EG, ES, ES, FI, FI, GB, GD, GE, GE, GH, GM, HR, HR, HU, HU, ID, IL, IN, IS, JP, JP, KE, KE, KG, KG, KP, KP, KP, KR, KR, KZ, KZ, KZ, LC, LK, LR, LS, LS, LT, LU, LV, MA, MD, MD, MG, MK, MN, MW, MX, MX, MZ, MZ, NA, NI				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE,				

BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

US 2004203149 A1 20041014 US 2004-769953 20040202  
PRIORITY APPLN. INFO.: US 2003-447730P P 20030219

AB This invention relates to a composite material that comprises a **support** member that has a plurality of pores extending through the **support** member and, located in the pores of the **support** member, a macroporous cross-linked gel. The invention also relates to a process for preparing the composite material described above, and to its use. The composite material is suitable, for example, for separation of substances, for example by filtration or adsorption, including chromatog., for use as a **support** in synthesis or for use as a **support** for cell growth.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 2 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:609618 CAPLUS

DOCUMENT NUMBER: 141:142582

TITLE: Block polymer processing for mesostructured inorganic oxide materials

INVENTOR(S): Chmelka, Bradley F.; Danielson, Earl; Stucky, Galen D.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 88 pp., Cont.-in-part of U.S. Ser. No. 426,441.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004144726	A1	20040729	US 2004-736462	20040405
WO 9937705	A1	19990729	WO 1998-US26201	19981209
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6592764	B1	20030715	US 2000-554259	20001211
US 2003205528	A1	20031106	US 2003-426441	20030430
PRIORITY APPLN. INFO.:			WO 1998-US26201	W 19981209
			US 2000-554259	A1 20001211
			US 2002-434032P	P 20021217
			US 2003-426441	A2 20030430
			US 1997-69143P	P 19971209
			US 1998-97012P	P 19980818

AB Mesoscopically ordered, hydrothermally stable **metal** oxide-block copolymer composite or mesoporous materials are described herein that are formed by using amphiphilic block copolymers which act as structure directing agents for the **metal** oxide in a self-assembling

system.

L12 ANSWER 3 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2004:450720 CAPLUS  
 DOCUMENT NUMBER: 141:8302  
 TITLE: Heat-sealable polyester films utilizing waste PET with medium molecular weight and their manufacture  
 INVENTOR(S): Fujimaki, Takashi; Kobayashi, Yukio; Arita, Masanobu; Nakamoto, Takashi  
 PATENT ASSIGNEE(S): F Techs Y. K., Japan; C and S K. K.; Nakamoto Packs Co., Ltd.  
 SOURCE: Jpn. Kokai Tokkyo Koho, 22 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004155176	A2	20040603	JP 2002-360003	20021107
PRIORITY APPLN. INFO.:			JP 2002-360003	20021107

AB In the process, 100 parts (waste-derived) PET (MFR 45-130 g/10 min) are blended with 0.1-2 parts (0-100):(0-100) mixts. of  $\geq$ 3-functional epoxy compds. and bifunctional epoxy compds. and 0.05-2 parts organic acid metal salts, reactively extruded [with carboxyl-containing polyolefins (MFR  $\leq$ 130 g/10 min)] in  $\leq$ (13.3 + 103)-Pa pressure vacuo to MFR  $\leq$ 40 g/10 min, and extrusion laminated on (primer- or ozone-treated) supports to form films with good heat resistance. The films may show heat seal strength 200-2500 g/15 mm. Thus, 100 parts clear flake of waste PET bottles were kneaded with 0.587 part 75:25 (%) Epolite 40E (ethylene glycol diglycidyl ether)/Epolite 100MF (trimethylolpropane triglycidyl ether) mixture and 0.20 part Li Ca Na stearate and pelletized to give a pellet (MFR 9.4 g/10 min), which was blended with Ca stearate and extrusion laminated on a release-finished PET film to give a film showing elongation  $\leq$ 1.2% and small tearing resistance.

L12 ANSWER 4 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2004:76236 CAPLUS  
 DOCUMENT NUMBER: 140:147237  
 TITLE: Method for producing selective separation membrane excellent in anti-fouling stability  
 INVENTOR(S): Koo, Ja-yeong; Kim, Sun-sik; Yoon, Seong-ro; Hong, Son-pyo  
 PATENT ASSIGNEE(S): Saehan Industries, Inc., S. Korea  
 SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004025102	A2	20040129	JP 2002-187857	20020627
PRIORITY APPLN. INFO.:			JP 2002-187857	20020627

AB A method is provided for producing selective separation membrane (polyamide reverse-osmosis composite membrane) excellent in fouling stability. The

method comprises forming a polyamide thin film on a porous **support** body, and afterwards, performing a hydrophilic coating on the polyamide thin film to produce a hydrophilic polyamide reverse-osmosis composite membrane. The hydrophilic coating is characterized in that an epoxy compound possessing at least more than two epoxy groups is coated on the polyamide composite membrane, and afterwards, the epoxy compound is cross-linked to yield a water-insol. polymer.

L12 ANSWER 5 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2004:658390 CAPLUS  
 TITLE:  $\beta$ -Selective epoxidation of  $\Delta 5$ -steroids by O<sub>2</sub> using silica **supported** cobalt **catalysts**  
 AUTHOR(S): Salvador, Jorge A. R.; Silvestre, Samuel M.; Clark, James H.  
 CORPORATE SOURCE: Laboratorio de Quimica Farmaceutica, Faculdade de Farmacia da Universidade de Coimbra, 3000-295 Coimbra, N/A, Port.  
 SOURCE: Abstracts of Papers, 228th ACS National Meeting, Philadelphia, PA, United States, August 22-26, 2004 (2004), ORGN-125. American Chemical Society: Washington, D. C.  
 CODEN: 69FTZ8  
 DOCUMENT TYPE: Conference; Meeting Abstract  
 LANGUAGE: English  
 AB The synthesis of 5 $\beta$ ,6 $\beta$ - **epoxides** is a useful reaction since this group is present in many biol. active steroids. Chandrasekaran et al. And more recently a number of other groups including ourselves, demonstrated that these **epoxides** can be obtained from  $\Delta 5$ -steroids using biphasic systems involving potassium permanganate and **metal salts**. Recently the  $\beta$ -epoxidn. of  $\Delta 5$ -steroids using ketones as **catalysts** and oxone as the terminal oxidant was reported. The use of mol. oxygen or air as the oxidant in the presence of either metalloporphyrin or Mn(II), Ni(II), Fe(III) and Co(II) complexes as **catalysts** is of greater industrial interest, but a difficult separation step is needed to remove the **catalyst** which cannot easily be reused. Here we report the use of some heterogeneous cobalt **catalysts** for the 5 $\beta$ ,6 $\beta$ - epoxidn. of  $\Delta 5$ -steroids under Mukaiyama reaction conditions (Scheme 1).

L12 ANSWER 6 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 1  
 ACCESSION NUMBER: 2003:717729 CAPLUS  
 DOCUMENT NUMBER: 139:231102  
 TITLE: **Ethylene oxide** manufacture and **catalyst** carrier preparation  
 INVENTOR(S): Schmitz, Andrew D.  
 PATENT ASSIGNEE(S): USA  
 SOURCE: U.S. Pat. Appl. Publ., 6 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003171215	A1	20030911	US 2002-85161	20020301
WO 2003074171	A1	20030912	WO 2003-US5503	20030221

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1480742 A1 20041201 EP 2003-709297 20030221

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

BR 2003008078 A 20041221 BR 2003-8078 20030221

PRIORITY APPLN. INFO.: US 2002-85161 A 20020301  
WO 2003-US5503 W 20030221

AB The aqua-thermal treatment of an **ethylene oxide catalyst** carrier and a Ag **catalyst** is prepared for oxidation of ethylene to form **ethylene oxide**. Introduction of active ions (from carboxylic acids, ammonium fluoride, **alkali metal salts**, etc.) to the wash, and use of promoters (e.g. S, Cs) in the **catalyst** enhance the activity.

L12 ANSWER 7 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:716158 CAPLUS

DOCUMENT NUMBER: 137:248099

TITLE: Epoxidation **catalyst** for converting olefins to **epoxides**

INVENTOR(S): Mizuno, Noritaka; Sumida, Yasutaka; Yonehara, Koji; Wada, Masahiro; Urata, Minoru

PATENT ASSIGNEE(S): Nippon Shokubai Co., Ltd., Japan

SOURCE: PCT Int. Appl., 49 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002072257	A2	20020919	WO 2002-JP2056	20020306
WO 2002072257	A3	20021024		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2002336698	A2	20021126	JP 2002-31961	20020208
EP 1380340	A2	20040114	EP 2002-702752	20020306
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
US 2003171604	A1	20030911	US 2003-130944	20030307
US 6743748	B2	20040601		
PRIORITY APPLN. INFO.:		JP 2001-68819	A 20010312	

AB The **catalyst**, giving **epoxides** in high yield and enhancing the effectiveness of an oxidizing agent, has a two-defect and/or three-defect structural part and comprises a heteropolyoxometalate anion having a Si or P heteroatom and a polyatom; and at least one element which is different from the polyatom and is selected from a group consisting of V, Ta, Nb, Sb, Bi, Cr, Mo, Se, Te, Re, Co, Ni, Ru, Rh, Pd, Os, Pt, Ir, Ag, Au, Zn, Al, Ga, In, Sc, Y, Ti, Zr, Hf, Ge, Sn, and lanthanides. Adding 13.5 mL 0.5 M NaVO<sub>3</sub> to 30 mL 1 M HCl containing 10 g K<sub>8</sub>[ $\gamma$ -SiW<sub>10</sub>O<sub>36</sub>]·12H<sub>2</sub>O, stirring 5 min, removing insol., adding 8.84g Bu<sub>4</sub>NBr and 40 g H<sub>2</sub>O, drying, adding 40 mL CH<sub>3</sub>CN then 400 mL H<sub>2</sub>O, stirring 10 min at 0°, and drying the solid gave a **catalyst** (V-POM). A **silica-supported** V-POM was used for epoxidn. of propylene, giving propylene oxide with yield 24.6% and selectivity 98.4%.

L12 ANSWER 8 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:850177 CAPLUS

DOCUMENT NUMBER: 137:345046

TITLE: Superparamagnetic nanostructured materials with amphiphilic block copolymers as structure-directing agents

INVENTOR(S): Garcia, Carlos; Wiesner, Ulrich B.

PATENT ASSIGNEE(S): Cornell Research Foundation, Inc., USA

SOURCE: U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002164481	A1	20021107	US 2002-120779	20020412
US 6645626	B2	20031111		
WO 2003049936	A1	20030619	WO 2002-US8259	20020412
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1397243	A1	20040317	EP 2002-802541	20020412
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
PRIORITY APPLN. INFO.:			US 2001-283354P	P 20010413
			WO 2002-US8259	W 20020412

AB The invention relates generally to superparamagnetic nanostructured materials and a method for making the same. The mesoporous nanostructures are useful as filtration devices and catalytic material. Amphiphilic block copolymers are used as structure-directing agents for the production of superparamagnetic nanostructured material. A block copolymer solution containing

an amphiphilic block copolymer is formed. A sol-gel precursor is formed by hydrolyzing and condensing a silicate precursor solution. An Fe precursor is added to either the block copolymer solution or the sol-gel precursor.

The sol-gel precursor is mixed with the block copolymer solution to form a hybrid inorg. nanostructured material. Solvent is then removed giving individual nanostructured material which is calcinated to form the superparamagnetic nanostructured material. The resulting superparamagnetic nanostructured material may be in the shape of a sphere, a cylinder, lamellae, or a mesoporous structure.

L12 ANSWER 9 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:387624 CAPLUS  
 DOCUMENT NUMBER: 136:386560  
 TITLE: Epoxidation of olefins using **supported**  
           lanthanide-promoted silver **catalysts**  
 INVENTOR(S): Mul, Guido; Asaro, Marianna F.; Hirschon, Albert S.;  
                   Wilson, Robert B., Jr.  
 PATENT ASSIGNEE(S): SRI International, USA  
 SOURCE: U.S., 8 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6392066	B1	20020521	US 2001-791904	20010222
PRIORITY APPLN. INFO.:			US 2001-791904	20010222

AB A process is provided for use in the epoxidn. of olefins, having particular utility in the epoxidn. of propylene to form propylene oxide, using a lanthanide-promoted, **supported**, silver **catalyst** prepared via precipitation. A preferred embodiment uses silver nitrate and lanthanum nitrate to form the **catalyst** on a BaCO<sub>3</sub> **support**.

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 10 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:900812 CAPLUS  
 DOCUMENT NUMBER: 137:385241  
 TITLE: Selective hydrogenation of unsaturated epoxy compounds  
 INVENTOR(S): Takahashi, Yuko; Hara, Yoshinori  
 PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002338562	A2	20021127	JP 2001-142982	20010514
PRIORITY APPLN. INFO.:			JP 2001-142982	20010514

AB C-C unsatd. bonds of unsatd. epoxy compds. are selective hydrogenated using **catalysts** manufactured by reduction of noble **metal** mineral acid **salts** (except for chlorides) **supported** on activated C. Thus, Rh-containing Rh(NO<sub>3</sub>)<sub>3</sub> was **supported** on activated C and reduced by HCO<sub>2</sub>H to give Rh/activated C **catalyst**, which was used in hydrogenation of Epikote 828 (epoxy equivalent 186) to give completely aromatic ring hydrogenated product with epoxy equivalent 198.

L12 ANSWER 11 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2001:269141 CAPLUS  
 DOCUMENT NUMBER: 134:296603  
 TITLE: Catalyst and method for preparation of ethylene oxide  
 INVENTOR(S): Iwakura, Tomotaka; Yamada, Soichiro  
 PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001104788	A2	20010417	JP 1999-283897	19991005
PRIORITY APPLN. INFO.:			JP 1999-283897	19991005

AB The catalyst with high selectivity and good activity prepared by supporting  $\geq 1$  alkali metal and tin on a porous carrier and then supporting Ag and  $\geq 1$  alkali metal on the carrier, is useful as a catalyst in oxidizing ethylene to form ethylene oxide. Thus, ethylene was oxidized with oxygen in the presence of catalysts (content 12% Ag, 753 ppm Cs, and 150 ppm Sn) prepared by successively treating  $\alpha$ -alumina porous carrier with Cs<sub>2</sub>CO<sub>3</sub>, (NH<sub>4</sub>)<sub>2</sub>SnF<sub>6</sub> and a mixture of Ag-ethylenediamine-propanediamine complex, CsCl and Cs NO<sub>3</sub> at 230.0° to give ethylene oxide with selectivity 81.4% at conversion 40%.

L12 ANSWER 12 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2001:270194 CAPLUS  
 DOCUMENT NUMBER: 134:296604  
 TITLE: Catalyst and method for preparation of ethylene oxide  
 INVENTOR(S): Iwakura, Tomotaka; Yamada, Soichiro  
 PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001104787	A2	20010417	JP 1999-283896	19991005
PRIORITY APPLN. INFO.:			JP 1999-283896	19991005

AB The catalyst with high selectivity prepared by supporting  $\geq 1$  alkali metal and  $\geq 1$  Group 5 element having atomic number  $\geq 41$  on a porous carrier and then supporting Ag and  $\geq 1$  alkali metal on the carrier, is useful as a catalyst in oxidizing ethylene to form ethylene oxide. Thus, ethylene was oxidized with oxygen in the presence of catalysts (content 12% Ag, 595 ppm Cs, and 50 ppm Ta) prepared by successively treating  $\alpha$ -alumina porous carrier with Cs<sub>2</sub>CO<sub>3</sub>, (NH<sub>4</sub>)<sub>2</sub>TaF<sub>6</sub> and a mixture of Ag-ethylenediamine-propanediamine complex, CsCl and Cs NO<sub>3</sub> to give ethylene oxide with selectivity

81.3% at conversion 40%.

L12 ANSWER 13 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2002:423977 CAPLUS  
 DOCUMENT NUMBER: 136:386607  
 TITLE: Preparation of polyether polyol using bimetallic composite catalysts  
 INVENTOR(S): Kang, Maoqing; Wang, Xinkui; Feng, Yuelan; Yin, Ning; Zhang, Qingyun  
 PATENT ASSIGNEE(S): Shanxi Inst. of Coal Chemistry, Chinese Academy of Sciences, Peop. Rep. China  
 SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 11 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Chinese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
CN 1304946	A	20010725	CN 2000-122073	20000816
CN 1109058	B	20030521		

PRIORITY APPLN. INFO.: CN 2000-122073 20000816  
 AB The catalysts, having high catalytic activity and low cost, contain (A) a bimetallic cyanide ( $K_3[Co(CN)_6]_2$ ), (B) an organic complexing agent such as alcs. ethers, and (C)  $H_2SO_4$  or its salts, e.g.,  $ZnSO_4$ ,  $MgSO_4$ , etc. in a ratio of C/A as 0.5-5.0. potassium. One example of the catalysts was prepared by steps of (1) mixing 270 mL aqueous solution of 15 g  $Zn_3[Co(CN)_6]_2$  and 75 mL aqueous solution of 45 g  $ZnCl$  in 180 mL aqueous solution of 180 mL diethylene glycol di-Me ether, stirring and filtering the obtained solid from step 1, (2) mixing 1/3 of the solid with 12 g  $ZnSO_4$  in 105 mL diethylene glycol di-Me ether and 45 mL water, stirring and filtering, and (3) blending the solid from step 2 in 150 mL diethylene glycol di-Me ether, filtering, drying and pulverizing to powder and was used in preparation of ethylene oxide-glycerin copolymer.

L12 ANSWER 14 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2001:795455 CAPLUS  
 DOCUMENT NUMBER: 136:95024  
 TITLE: Asymmetric Sandwich-Type Polyoxoanions. Synthesis, Characterization, and X-ray Crystal Structures of Diferric Complexes  $[TMIIFeIII_2(P2W15O56)(P2TMII_2W13O52)]^{16-}$ , TM = Cu or Co  
 AUTHOR(S): Anderson, Travis M.; Hardcastle, Kenneth I.; Okun, Nelya; Hill, Craig L.  
 CORPORATE SOURCE: Department of Chemistry, Emory University, Atlanta, GA, 30322, USA  
 SOURCE: Inorganic Chemistry (2001), 40(25), 6418-6425  
 CODEN: INOCAJ; ISSN: 0020-1669  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 136:95024

AB Reaction of the diferric sandwich-type polyoxometalate  $(NaOH_2)_2FeIII_2(P2W15O56)_2^{16-}$  (1) with excess aqueous Cu(II) or Co(II) yields a new type of d-electron-metal substituted polyoxometalate,  $[TMIIFeIII_2(P2W15O56)(P2TMII_2W13O52)]^{16-}$ , TM = Cu (2), Co (3), resp. The structure of the Na salt of 2 ( $Na_2$ ), determined by single-crystal

x-ray diffraction anal. (a 13.4413(9), b 21.2590(15), c 25.5207(18) Å,  $\alpha$  80.475(2),  $\beta$  85.555(2),  $\gamma$  89.563(2) $^\circ$ , triclinic, P.hivin.1, R1 = 5.42%, based on 43097 independent reflections), consists of a defect Fe2Cu central unit sandwiched between two different trivacant Wells-Dawson-type units, P2W15 and P2Cu2W13, where the latter unit has two octahedral Cu(II) ions substituted for two adjacent belt W(VI) atoms. The CuO5OH2 octahedron in the central unit shows pronounced Jahn-Teller distortion. A low-resolution x-ray structure of Na3 is included in the Supporting Information. UV-visible, IR, 31P NMR, cyclic voltammetric, and elemental anal. data are all consistent with the structure determined from the x-ray anal. Cyclic voltammograms of 2 and 3 exhibit multiple electron-transfer processes under ambient conditions, and Cu or Co incorporation into the framework of 1 results in a substantial perturbation of the electrochem. properties of the polyoxotungstate framework. The Bu4N+ salts of 2 and 3 (readily prepared by metathesis) are stable and effective catalysts for the oxidation of some alkenes with high yields based on H2O2.

REFERENCE COUNT: 116 THERE ARE 116 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 15 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 2  
 ACCESSION NUMBER: 2000:421074 CAPLUS  
 DOCUMENT NUMBER: 133:60358  
 TITLE: Process for making 2,3-dihalopropanols from dihalopropanols by hydrogenation in presence of transition metal catalysts  
 INVENTOR(S): Vosejpk, Paul C.; Hucul, Dennis A.; Maughon, Bob R.; Ito, Larry N.; Campbell, Robert M.  
 PATENT ASSIGNEE(S): The Dow Chemical Company, USA  
 SOURCE: PCT Int. Appl., 21 pp.  
 CODEN: PIIXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000035844	A1	20000622	WO 1999-US29903	19991216
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1140751	A1	20011010	EP 1999-968898	19991216
EP 1140751	B1	20040324		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6350922	B1	20020226	US 1999-464682	19991216
JP 2002532449	T2	20021002	JP 2000-588108	19991216
TW 461879	B	20011101	TW 1999-88122248	20000218
PRIORITY APPLN. INFO.:			US 1998-112839P	P 19981218
			WO 1999-US29903	W 19991216

AB The patent relates to a process for making 2,3-dihalopropanol including reacting 2,3-dihalopropanol with a hydrogenating agent in the presence of

an iridium and a second transition metal mixed metal **catalyst** where the second transition metal is selected from ruthenium, iron, molybdenum, tungsten, rhenium, osmium, manganese or vanadium, under conditions such that 2,3-dihalopropanol is formed. The second transition metal is deposited upon a **supporting** material selected from silica, silylated silica, carbon, alumina, titania, zirconia, magnesia and combinations thereof. The **catalyst** includes a Group I or transition metal promoter ion selected from Li, Na, K, Cs, Fe, Mo, W, V, Mn, Os, Pt, Pd, Rh and mixts. thereof. The 2,3-dihalopropanol is particularly useful in a process for making epihalohydrin. Thus, hydrogenation of dichloropropanol with a silica-**supported** **catalyst** containing Ru 2.0% and Ir 0.5% at 85° for 30 min showed 68.9% conversion, 32% loss of activity, and 92.3% selectivity.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 16 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 3

ACCESSION NUMBER: 2000:144107 CAPLUS

DOCUMENT NUMBER: 132:181012

TITLE: Process for the manufacture of **epoxides** from olefins and oxygen in the presence of hydrogen

INVENTOR(S): Hoelderich, Wolfgang; Laufer, Wilhelm

PATENT ASSIGNEE(S): Germany

SOURCE: Ger. Offen., 6 pp.

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19845975	A1	20000302	DE 1998-19845975	19980827
JP 2003062468	A2	20030304	JP 2001-259236	20010829
PRIORITY APPLN. INFO.:			DE 1998-19845975	A 19980827

OTHER SOURCE(S): MARPAT 132:181012

AB Olefins are converted selectively to **epoxides** in a pollution-free process with oxygen and hydrogen by use of modified zeolite **catalysts**, i.e., Ti or V silicates impregnated with ≥1 Pt-group metal after impregnation with an **alkali metal salt** or alkaline earth metal **salt**. Thus, 455 g Si(OEt)<sub>4</sub> was stirred with 15 g Ti(OEt)<sub>4</sub> and treated with Pr4NOH at 10-12°; EtOH was evaporated at 40-50°, water added, the mixture stirred 10 days at 120° in an autoclave, and the precipitate was washed, dried, and calcined 10 h at 550° in air to give a **catalyst support**, which was impregnated first with 0.5% NaBr and then with 1% Pd and 0.01% Pt. Passing a mixture of H 1.3, N 1.4, O 1.3, and propylene 0.1 L/h through 0.2 g of this **catalyst** at 43°/7 bars resulted in 19.4% propylene conversion and 87.3% selectivity to propylene oxide, compared with 34.1% and 69.2%, resp., when the NaBr impregnation step was omitted from the **catalyst** preparation

L12 ANSWER 17 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:175518 CAPLUS

DOCUMENT NUMBER: 132:209865

TITLE: Preparation and properties of silicas and metallosilicates with mesoporous narrow pore size distribution

INVENTOR(S): Hasenzahl, Steffen; Schubert, Jurgen; Jantke, Ralf

PATENT ASSIGNEE(S) : Degussa-Huls Aktiengesellschaft, Germany

SOURCE: Eur. Pat. Appl., 24 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 985636	A1	20000315	EP 1999-117361	19990903
EP 985636	B1	20011114		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
DE 19841142	A1	20000323	DE 1998-19841142	19980909
TW 486449	B	20020511	TW 1999-88115246	19990903
JP 2000109312	A2	20000418	JP 1999-254541	19990908

PRIORITY APPLN. INFO.: DE 1998-19841142 A 19980909

AB Precipitated silicas and **metal** silicates are prepared with the following properties: (1) a narrow mesopore radius distribution, (2) an average pore diameter of 2-10 nm (preferably 2-8 nm), (3) a sp. surface area >500 m<sup>2</sup>/g, (4) a total pore volume >3.0 mL/g, (5) a pore volume >0.5 mL/g for pores 2-30 nm, (6) no or few micropores, (6) are free of crystalline phases and have no long-range ordering, and (7) have a maximum number of silanol groups, based on the sp. surface area, <3/nm<sup>2</sup>, preferably <2/nm<sup>2</sup>. The compns. are typically prepared by precipitation of an aqueous silicate or **metal** silicate solution with a mineral acid (especially HCl) under controlled temperature and time

conditions in the presence of a surfactant, followed by aging of the solution. The compns. are then recovered by filtration, washing, drying, and removal of the co-precipitated surfactants by extraction or by thermal treatment.

Suitable

surfactants are preferably nonionic compns., typically ethoxylated alcs. The finished silicas or **metal** silicates have uses oxide supports, catalyst supports, fillers, delustering agents, adsorbents, and separation aids.

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 18 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:576863 CAPLUS

DOCUMENT NUMBER: 131:214726

TITLE: Method for producing double **metal** cyanide catalysts

INVENTOR(S) : Grosch, Georg Heinrich; Larbig, Harald; Lorenz, Reinhard; Junge, Dieter; Gehrer, Eugen; Treuling, Ulrich

PATENT ASSIGNEE(S) : Basf A.-G., Germany

SOURCE: PCT Int. Appl., 22 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9944940	A1	19990910	WO 1999-EP1152	19990223
W: AL, AU, BG, BR, BY, CA, CN, CZ, GE, HU, ID, IL, IN, JP, KR, KZ,				

LT, LV, MK, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TR, UA, US, AM,  
 AZ, BY, KG, KZ, MD, RU, TJ, TM  
 RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,  
 PT, SE

DE 19809538 A1 19990909 DE 1998-19809538 19980305  
 AU 9929280 A1 19990920 AU 1999-29280 19990223

PRIORITY APPLN. INFO.: DE 1998-19809538 A 19980305  
 WO 1999-EP1152 W 19990223

AB A method for producing double metal cyanide compds., comprises  
 (a) reacting a solution of a metal salt  $M1m(X)n$  with a  
 solution of a cyanometallate compound  $HaM2(CN)b(A)c$  ( $M1, M2 = \text{metal}$   
 cations;  $X, A = \text{anion}$ ;  $a, b, c, m, n = \text{whole nos. selected to guarantee}$   
 the electroneutrality of the particular salt) and  $\geq 1$  of  
 the 2 solns. containing at  $\geq 1$   $H2O$ -soluble organic ligand containing  
 heteroatoms;

(b) combining the resulting suspension with a  $H2O$ -miscible ligand which  
 can be the same as or different from the ligand used in (a); and (c) separating  
 the double metal cyanide compound from the suspension. At least  
 one of the educt solns. used in (a) contains  $\geq 1$  inert (in)organic  
 solid which is insol. in the educts and end products. The double  
 metal cyanide compds. are useful as catalysts for the  
 polymerization of alkylene oxides.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 19 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:576841 CAPLUS

DOCUMENT NUMBER: 131:214774

TITLE: Manufacture of supported double  
 metal cyanide catalysts and their  
 use for producing polyether alcohols

INVENTOR(S): Grosch, Georg Heinrich; Larbig, Harald; Lorenz,  
 Reinhard; Junge, Dieter; Kammel, Ulrich

PATENT ASSIGNEE(S): Basf A.-G., Germany

SOURCE: PCT Int. Appl., 39 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9944739	A1	19990910	WO 1999-EP1151	19990223
W: CA, CN, JP, KR, MX, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
DE 19809539	A1	19990909	DE 1998-19809539	19980305
EP 1060020	A1	20001220	EP 1999-937890	19990223
R: AT, BE, CH, DE, ES, FR, GB, IT, LI, NL, SE, PT				
US 6362126	B1	20020326	US 2000-623553	20000909
PRIORITY APPLN. INFO.:			DE 1998-19809539	A 19980305
			WO 1999-EP1151	W 19990223

AB Double metal cyanide catalysts (DMC)  
 $M1a[M2(CN)b(A)c]d \cdot fM1gXn \cdot h(H2O) \cdot eL$  ( $M1, M2 = \text{selected}$   
 metal ions;  $A, X = \text{selected anion}$ ;  $L = H2O$ -miscible ligand;  $a, b,$   
 $c, d, g, n$  selected to ensure electroneutrality of DMC;  $e = \text{coordination}$   
 $\text{no of the ligands}$ ;  $f, h = \text{digits or fractions } \geq 0$ ) are manufactured by  
 combining aqueous solution of a hydrogen cyanometallate acid or a  
 cyanometallate

salt with stoichiometric excess of a metal salt  $M_1m(X)n$  ( $M_1$ ,  $X$ ,  $m$ ,  $n$  as above) solution and adding organic ligands, e.g., alcs., aldehydes, ketones, amides, etc., to the resulting suspension. DMC are deposited on solid, inert nonfoamed supports, e.g., Al or Al<sub>2</sub>O<sub>3</sub> particles, or blended with the supports or shaped into forms. The catalysts are used for producing polyether alcs. with a low unsatd. compound content by means of catalytic ring-opening polymerization of alkylene oxides. For example, passing aqueous solution of K<sub>3</sub>[Co(CN)<sub>6</sub>] through

an

acid ion exchanger, combining the eluate with aqueous solution of Zn(OAc)<sub>2</sub>·2H<sub>2</sub>O, adding Me<sub>3</sub>COH to the stirred suspension, adding aqueous solution of Zn(NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O and filtering the suspension gave a solid which was resuspended in Me<sub>3</sub>COH and the suspension treated with Si(OEt)<sub>4</sub>. The resulting mixture was sprayed on AcOH-soaked, warm Selexsorb CD and dried to give a DMC catalyst which was used to produce propylene oxide polymer having viscosity 329 MPa·s (25°), OH number 57.3 mg KOH/g, and containing 0.0073 meq/g unsatd. compds.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 20 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:487339 CAPLUS

DOCUMENT NUMBER: 131:131814

TITLE: Block polymer based preparation of mesostructured inorganic oxide materials for separations and catalyst supports

INVENTOR(S): Stucky, Galen D.; Chmelka, Bradley F.; Zhao, Dongyuan; Melosh, Nick; Huo, Qisheng; Feng, Jianglin; Yang, Peidong; Pine, David; Margolese, David; Lukens, Wayne, Jr.; Fredrickson, Glenn H.; Schmidt-Winkel, Patrick

PATENT ASSIGNEE(S): The Regents of the University of California, USA

SOURCE: PCT Int. Appl., 140 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9937705	A1	19990729	WO 1998-US26201	19981209
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9937397	A1	19990809	AU 1999-37397	19981209
EP 1037940	A1	20000927	EP 1998-967050	19981209
EP 1037940	B1	20040908		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2003531083	T2	20031021	JP 2000-528617	19981209
AT 275600	E	20040915	AT 1998-967050	19981209
US 6592764	B1	20030715	US 2000-554259	20001211

US 2003205528	A1	20031106	US 2003-426441	20030430
US 2004144726	A1	20040729	US 2004-736462	20040405
PRIORITY APPLN. INFO.:			US 1997-69143P	P 19971209
			US 1998-97012P	P 19980818
			WO 1998-US26201	W 19981209
			US 2000-554259	A1 20001211
			US 2002-434032P	P 20021217
			US 2003-426441	A2 20030430

AB Highly mesoscopically ordered, hydrothermally stable and ultra large pore size **metal** oxide-block copolymer composites or mesoporous oxide films, fibers, and monoliths are formed using amphiphilic block copolymers which act as structure directing agents for the **metal** oxide in a self-assembling system. Heating to remove the template yields a mesoporous product that is thermally stable in boiling water. Calcination yields mesoporous oxide structures with high BET surface area. Prepared membranes can be functionalized and used for sepn., catalysis, and sensors. The mesoporous oxides can be used for chromatog. separation of biomols. such as enzymes and proteins. In an example, silica gel was obtained by acid-catalyzed hydrolysis of tetraethoxysilane in EtOH solution. The gel was mixed with a solution of a polyethylene oxide-polypropylene oxide-polyethylene oxide triblock copolymer (e.g., Pluronic P123) and inorg. salts (e.g., NaCl) in EtOH and water. Silica membranes (e.g., calcined hexagonal mesoporous SBA-15) were obtained after drying at room temperature, washing with water to remove the salts, and calcination to remove the copolymer.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 21 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:464134 CAPLUS  
 DOCUMENT NUMBER: 131:96578  
 TITLE: Differential thermal imaging for building and developing combinatorial libraries, especially for catalysts  
 INVENTOR(S): Maier, Wilhelm Friedrich; Holzwarth, Arnold  
 PATENT ASSIGNEE(S): Studiengesellschaft Kohle m.b.H., Germany  
 SOURCE: PCT Int. Appl., 27 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9934206	A1	19990708	WO 1998-EP8214	19981215
W: CA, JP, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
DE 19826303	A1	19991216	DE 1998-19826303	19980612
CA 2316188	AA	19990708	CA 1998-2316188	19981215
EP 1040348	A1	20001004	EP 1998-966333	19981215
R: AT, BE, CH, DE, DK, ES, FR, GB, IT, LI, LU, NL, SE, IE				
JP 2002500359	T2	20020108	JP 2000-526806	19981215
PRIORITY APPLN. INFO.:			DE 1997-19757754	A 19971223
			DE 1998-19826303	A 19980612
			WO 1998-EP8214	W 19981215

AB A combinatorial process for building chemical and catalyst libraries consists of comparing the determination of the heat released from phys.

or chemical processes, in which a differential thermal image is registered with an IR camera that consists of a subtraction of the IR emissions before and after the process in question. The chemical or phys. process (e.g., sorption, phase change, or chemical reaction) is carried out in the presence of a **catalyst**, in which the **catalyst** is oriented on the **catalyst** library plate before imaging. Individual **catalysts** on the **catalyst** library plate can be prepared in the form of **metal** oxides or **mixed metal** oxides, the precursors of which are aqueous or alc. solns. of silicon- or **metal** compds. as their alkoxy, mixed alkoxy derivs., alkoxyoxo, or acetylacetone derivs., or in the form of their halides or carboxylates, arranged on the surface of the library plate. Reactions carried out on such combinatorial arrays were 1-hexyne hydrogenation, oxidation of isoctane and toluene, lipase-mediated enantioselective acylation of 1-phenyl-1-ethanol with vinyl acetate, and **metal** salicylidene-mediated enantioselective hydrolysis of epichlorohydrin and 1,2-**epoxides**. In addition, other types of material combinatorial libraries can be used, including heterogeneous or homogeneous **catalysts** or enzymes.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 22 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2000:54554 CAPLUS  
 DOCUMENT NUMBER: 132:222066  
 TITLE: Use of heterogeneous copper **catalysts** and of acidic mixed oxides in organic synthesis  
 AUTHOR(S): Ravasio, Nicoletta  
 CORPORATE SOURCE: centro CSSCMTBO, C.N.R. centro CSSCMTBO, Milan, 20133, Italy  
 SOURCE: Recent Research Developments in Organic Chemistry (1999), 3(Pt. 1), 79-85  
 CODEN: RDOCJ  
 PUBLISHER: Transworld Research Network  
 DOCUMENT TYPE: Journal; General Review  
 LANGUAGE: English

AB A review with 21 refs. Heterogeneous copper **catalysts** have been successfully used in chemoselective reduction of  $\alpha,\beta$ -unsatd. ketones containing also an isolated olefinic bond, both in the presence of H2 and of secondary alc. as H donors. The use of some particular support allows design of bifunctional **catalysts** able to promote both a chemoselective reduction and the nucleophilic attack of an OH group to a C:C bond, thus allowing a clean synthesis of bicyclic ethers. The presence of Lewis acid sites on mixed cogels promotes other transformations such as double-bond isomerization, type-I ene reactions, and **epoxides** isomerization. The challenge for synthetic chemists is to set up processes that not only yield the desired product, but also are environmentally friendly. Some of the major goals of chemical clean technol. are to increase the selectivity of organic reactions, to replace stoichiometric reagents with **catalysts**, and to reduce the number of process steps. The main goal is to design new, heterogeneous, ultraselective hydrogenation **catalysts**, that can be proposed as effective alternative to the use of complex hydride in the presence of transition-**metal** complexes. The 2nd target is to set up synthetic processes where **catalysts** can play a dual role, in order to reduce the number of steps. In particular, the authors are trying to carry out a hydrogenation and an acid-catalyzed reaction in one pot. About 50% of the steps in a typical fine-chemical synthesis are catalyzed by Bronsted or Lewis homogeneous acids, while  $\approx$ 20% are selective

hydrogenation steps. Homogeneous acid **catalysts** produce inorg. **salts** and waste disposal problems, therefore the usefulness of such an approach from the environmental point of view is apparent. During the last few years, the performance of a series of Cu **catalysts**, **supported** on different oxides by chemisorption and hydrolysis of the tetraaminocopper complex  $[\text{Cu}(\text{NH}_3)_4]^{++}$ , was studied. This preparation method was compared with the conventional IW technique, and gives **catalysts** with higher metallic surface area, and therefore more active in H<sub>2</sub> activation.

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 23 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:768084 CAPLUS

DOCUMENT NUMBER: 130:13913

TITLE: Preparation of olefin oxides and their **catalysts**

INVENTOR(S): Sugita, Keisuke

PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 10316669	A2	19981202	JP 1997-130085	19970520
PRIORITY APPLN. INFO.:			JP 1997-130085	19970520

AB Title **catalysts** are prepared by **supporting** nitric acid **salts** and/or nitrous acid **salts** on silicates and calcining under gaseous H<sub>2</sub>. The **supports** are prepared by ion-exchanging alkali **metal**- and heavy **metal**-containing silicates in aqueous NH<sub>4</sub>NO<sub>3</sub> and/or NH<sub>3</sub> solns. and calcining. Olefin oxides are prepared by reaction of olefins with mol. O in the presence of the **catalysts**. Silicate prepared from KNO<sub>3</sub>, titanium tetraisopropoxide, and tetraethylorthosilicate in aqueous Pr<sub>4</sub>NOH solution is treated with aqueous NH<sub>4</sub>NO<sub>3</sub> solution and calcined at 500-530° to give a **support** with Si/Ti mol ratio 100. The **support** is immersed in an aqueous solution CeNO<sub>3</sub> and Ca(NO<sub>3</sub>)<sub>2</sub> and calcined with feeding N-H gaseous mixture at 150° to give a **catalysts**. A gaseous mixture containing propylene and air (1:4) was fed into a reactor packed with the **catalyst** under 8 kgf/cm<sup>2</sup>G at 160° to give propylene oxide with 67% selectivity at 1.5% conversion.

L12 ANSWER 24 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:767814 CAPLUS

DOCUMENT NUMBER: 130:66887

TITLE: Oxidation of olefins with high yield and oxidation **catalysts** therefor

INVENTOR(S): Sugita, Keisuke; Oda, Yoshiaki

PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10314594	A2	19981202	JP 1997-130885	19970521
PRIORITY APPLN. INFO.:			JP 1997-130885	19970521

AB Title **catalysts** are obtained by **supporting** nitrate **salts** and/or nitrite **salts** on silicate carriers (prepared by ion-exchanging alkali **metal/heavy metal**-containing silicates in aqueous solns. of NH<sub>4</sub>NO<sub>3</sub> and/or NH<sub>3</sub> and then sintering) and irradiating with microwave. Oxidized olefins are prepared by treating olefins and mol. O in the presence of the above **catalysts**. Thus, an aqueous solution containing silicate carrier (prepared by ion exchange of **metal**-containing silicates (prepared from NPr<sub>4</sub>OH, KNO<sub>3</sub>, Ti(OCHMe<sub>2</sub>)<sub>4</sub>, Si(OEt)<sub>4</sub>, and H<sub>2</sub>O) in NH<sub>4</sub>NO<sub>3</sub> aqueous solution and sintering; Si/Ti = 100] 8, CsNO<sub>3</sub> 0.11, and Ca(NO<sub>3</sub>)<sub>2</sub>·4H<sub>2</sub>O 0.13 g, stirred at 90°, freed of water, irradiated with microwave, and sintered at 200° for 1 h under 1:4 H/N to give an oxidation **catalyst**, which was charged into a reactor tube, provided with N and subsequently 1:4 propylene/air at flow rate 3000 mL/h at 8 kg/cm<sup>2</sup>-G pressure, and treated at 160° for 7 h to give a sample (collected during 6-7 h after reaction initiation), which showed conversion of propylene 2.5% and selectivity of propylene oxide 75%.

L12 ANSWER 25 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1998:335319 CAPLUS  
 DOCUMENT NUMBER: 129:40916  
 TITLE: Preparation of ester alkoxylates and **catalysts** for them  
 INVENTOR(S): Imanaka, Takehiro; Tanaka, Toshinori; Tahara, Hideo; Nagumo, Hiroshi  
 PATENT ASSIGNEE(S): Kao Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10137592	A2	19980526	JP 1996-301610	19961113
PRIORITY APPLN. INFO.:			JP 1996-301610	19961113

AB Ester alkoxylates having  $\geq 1$  CO<sub>2</sub>(AO)<sub>m</sub>R (R = alc. or phenol residue; A = C<sub>2</sub>-4 alkylene; m = average addition mol number)-groups, useful as surfactants, etc. (no data), are prepared by addition of C<sub>2</sub>-4 alkylene oxides with esters having  $\geq 1$  CO<sub>2</sub>R (R = same as above)-groups in the presence of the **catalysts** containing (1) alkali **metal**, alkaline earth **metal**, or rare earth **metal** organic acid **salts** and (2) **metal** oxides of MgO and Al<sub>2</sub>O<sub>3</sub>. Ba laurate was treated with MgO-Al<sub>2</sub>O<sub>3</sub> [prepared by calcination of Kyowaad 1000 [Mg<sub>4</sub>.5Al<sub>2</sub>(OH)<sub>13</sub>(CO<sub>3</sub>)<sub>n</sub>H<sub>2</sub>O] at 600° for 2 h] in the presence of Me laurate at 165° for 1 h to give Ba laurate **supported** on MgO-Al<sub>2</sub>O<sub>3</sub>. **Ethylene oxide** was treated with Me laurate in the presence of the **catalysts** at 165° under 3-5 kg/cm<sup>2</sup>G for 30 min to give Me laurate-**ethylene oxide** addition compd with average addition mol. number 3.

L12 ANSWER 26 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1997:640596 CAPLUS  
 DOCUMENT NUMBER: 127:263173  
 TITLE: Propylene oxide manufacture using alkaline earth metal compound-supported silver catalysts  
 INVENTOR(S): Kahn, Andrew; Gaffney, Anne; Pitchai, Rangasamy  
 PATENT ASSIGNEE(S): Arco Chemical Technology, L.P., USA; Arco Chemie Technologie Nederland B.V.  
 SOURCE: PCT Int. Appl., 30 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9734693	A1	19970925	WO 1997-EP1290	19970314
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5763630	A	19980609	US 1996-617236	19960318
CA 2249440	AA	19970925	CA 1997-2249440	19970314
AU 9720273	A1	19971010	AU 1997-20273	19970314
AU 718043	B2	20000406		
EP 888184	A1	19990107	EP 1997-908234	19970314
EP 888184	B1	19991208		
R: AT, BE, DE, ES, FR, GB, IT, NL				
CN 1213990	A	19990414	CN 1997-193146	19970314
CN 1093774	B	20021106		
BR 9708012	A	19990727	BR 1997-8012	19970314
AT 187356	E	19991215	AT 1997-908234	19970314
ES 2139446	T3	20000201	ES 1997-908234	19970314
JP 2001500051	T2	20010109	JP 1997-533128	19970314
US 6083870	A	20000704	US 1998-37441	19980310
PRIORITY APPLN. INFO.:			US 1996-617236	A 19960318
			WO 1997-EP1290	W 19970314

AB Propylene is oxidized to propylene oxide in the vapor phase using an O-containing gas and a **supported Ag catalyst** comprising Ag and a **support** comprised in whole or in part of an alkaline earth metal-containing compound selected from alkaline earth metal titanates, tribasic Ca phosphate, Ca molybdate, and Ca fluoride. Such supports provide significantly higher selectivity to the desired epoxide than would be expected from the performance of related materials, e.g. tricalcium phosphate. Propylene oxide (I) selectivity is also enhanced through the introduction of N oxide species such as NO, aliphatic halides such as Et chloride, and CO<sub>2</sub> into the O-containing gas. Tribasic Ca phosphate containing 41% Ag and 2% K was used, in the presence of 50 ppm Et chloride to convert propylene to I with propylene selectivity 36% at 6% conversion.

ACCESSION NUMBER: 1997:354010 CAPLUS  
 DOCUMENT NUMBER: 126:330932  
 TITLE: Process for preparing silver-containing epoxidation catalysts  
 INVENTOR(S): Matusz, Marek  
 PATENT ASSIGNEE(S): Shell Internationale Research Maatschappij BV, Neth.;  
 Shell Canada Limited  
 SOURCE: PCT Int. Appl., 29 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9713579	A1	19970417	WO 1996-EP4298	19961002
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI				
US 5739075	A	19980414	US 1995-540233	19951006
CA 2232942	AA	19970417	CA 1996-2232942	19961002
CA 2232942	C	20050104		
AU 9672843	A1	19970430	AU 1996-72843	19961002
EP 874688	A1	19981104	EP 1996-934517	19961002
EP 874688	B1	20020109		
R: BE, DE, ES, FR, GB, IT, NL				
JP 11513305	T2	19991116	JP 1996-514684	19961002
ES 2166468	T3	20020416	ES 1996-934517	19961002
PRIORITY APPLN. INFO.:			US 1995-540233	A 19951006
			WO 1996-EP4298	W 19961002

AB A title catalyst suitable for epoxidn. of olefins having no allylic H, in particular ethylene for the manufacture of ethylene oxide, is prepared by depositing a promoting amount of a rare earth metal salt and an alkaline earth metal salt and/or a salt of a Group VIII transition metal on a porous, refractory support, e.g.,  $\alpha$ -alumina, calcining the support, and depositing a catalytically effective amount of Ag, a promoting amount of alkali metal, optionally a promoting amount of Re and a promoting amount of a Re co-promoter selected from S, Mo, W, Cr, P, B and their mixts., on the support, and subsequently drying the support.

L12 ANSWER 28 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1997:732346 CAPLUS  
 DOCUMENT NUMBER: 128:13191  
 TITLE: Olefin oxidation catalysts and preparation of olefin oxides  
 INVENTOR(S): Yagi, Shunichi; Sugita, Keisuke  
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09291084	A2	19971111	JP 1996-102482	19960424
PRIORITY APPLN. INFO.:			JP 1996-102482	19960424

AB Olefin oxides are prepared by oxidation of olefins by mol. O in the presence of **catalysts** comprising nitrate and/or nitrite **salts** supported on silicates prepared by ion exchange of alkali metal- and heavy metal-containing silicates with aqueous NH4NO3 and/or aqueous NH3 and calcination. A mixture of K-containing Pr4NOH, Ti(OPr-i)4, and (EtO)4Si was stirred in H2O at room temperature, heated at 105° for 96 h, dried, and calcined at 500-530° to give **metal** silicate, which was treated with aqueous NH4NO3 at 90°, dried, and calcined at 500-530° to prepare a **support** (Si 44.2, Ti 0.84, K 0.019 weight%). The **support** 27, CsNO3 0.37, Ca(NO3)2.4H2O 0.44 g were mixed in H2O at 90° and heated at 150° for 1 h to give a **catalyst**, which was used in oxidation of propylene at 140-145° to result in 0.2% propylene conversion and 51% propylene oxide selectivity.

L12 ANSWER 29 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1997:226733 CAPLUS

DOCUMENT NUMBER: 126:212538

TITLE: **Supported Ziegler polymerization****catalyst and its use for olefin polymerization**  
Pcd-Polymeres Gesellschaft M.B.H., Austria

PATENT ASSIGNEE(S): Eur. Pat. Appl., 11 pp.

SOURCE: CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 757995	A1	19970212	EP 1995-110693	19950708
R: AT				
EP 754706	A1	19970122	EP 1996-109816	19960619
EP 754706	B1	19980805		
R: AT, BE, DE, ES, FI, FR, GB, IT, NL				
AT 169308	E	19980815	AT 1996-109816	19960619
PRIORITY APPLN. INFO.:			EP 1995-110693	A 19950708
AB	Title polymerization <b>catalyst</b> contains the reaction produce of (a) a <b>catalyst support</b> based on Al oxide, Si oxide, Ti oxide or Zr oxide and aluminoxanes and polyfunctional organic crosslinkers and (b) transition <b>metals salts</b> of Group IV-VIII, and optionally Mg-Compds. and electron donor compds. A solution of Me aluminoxane was slowly introduced to a suspension of Al2O3 and stirred 30 min, after drying the powder was suspended in THF and crosslinker Bisphenol A added dropwise over 45 min to give a crosslinked carrier. The above carrier was treated in turn with SiCl4, MgCl2, diisobutyl phthalate, and TiCl4 to give a solid component, which 32 mg with 12.6 mL AlEt3 cocatalyst and 0.9 mL cyclohexylmethyldimethoxysilane donor was used to polymerize propylene; giving polypropylene in 95 g yield, of weight-average mol. weight 200,000, m.p. 157°, and polydispersity 7.			

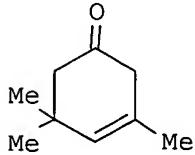
L12 ANSWER 30 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1997:310903 CAPLUS  
 DOCUMENT NUMBER: 127:50090  
 TITLE: Preparation, Characterization, and Synthetic Uses of  
 Lanthanide(III) Catalysts Supported  
 on Ion Exchange Resins  
 AUTHOR(S): Yu, Libing; Chen, Depu; Li, Jun; Wang, Peng George  
 CORPORATE SOURCE: Department of Chemistry, University of Miami, Coral  
 Gables, FL, 33124, USA  
 SOURCE: Journal of Organic Chemistry (1997), 62(11), 3575-3581  
 CODEN: JOCEAH; ISSN: 0022-3263  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 127:50090  
 AB Lanthanide(III) catalysts supported on ion exchange  
 resins (Ln-resins) were prepared from Dowex, Amberlite, Amberlyst, and other  
 cation exchange resins. The amount of lanthanides on resin supports  
 was measured through EDTA titration. The lanthanides in aqueous solution  
 exchanged  
 with almost all (H<sup>+</sup> or Na<sup>+</sup>) on the resins to form stable ionic complexes  
 between the lanthanides(III) and the resins. The effects of resin types,  
 resin sizes, and lanthanide salts were studied with a reaction  
 of indole and hexanal in aqueous solution and with an aldol reaction of  
 benzaldehyde and silyl enol ether in organic solvents. The study found that  
 among ion exchange resins tested Amberlyst XN-1010 and Amberlyst 15  
 complexed with lanthanides(III) were the most effective catalysts  
 . The selective Ln-resins were used to catalyze acetalization of  
 aldehydes, aldol reaction of formaldehyde or benzaldehyde in aqueous solution,  
 nucleophilic addition to an imine, allylation of an aldehyde, an aza  
 Diels-Alder (DA) reaction, and a ring-opening reaction of an  
 epoxide. Also, glycosylation of alc. using glucosyl fluoride as a  
 donor was also promoted with the Ln-resin. Thus, this work demonstrated  
 potential uses of lanthanide(III) catalysts supported  
 on ion exchange resins in routine organic reactions.  
 REFERENCE COUNT: 91 THERE ARE 91 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 31 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1997:392890 CAPLUS  
 DOCUMENT NUMBER: 127:36190  
 TITLE: Catalytic conversion of carbon dioxide using phase  
 transfer catalysts  
 AUTHOR(S): Park, D. W.; Moon, J. Y.; Yang, J. G.; Lee, J. K.  
 CORPORATE SOURCE: Department of Chemical Engineering, Pusan National  
 University, Pusan, 609-735, S. Korea  
 SOURCE: Energy Conversion and Management (1997), 38(Suppl.,  
 Proceedings of the Third International Conference on  
 Carbon Dioxide Removal, 1996), S449-S454  
 CODEN: ECMADL; ISSN: 0196-8904  
 PUBLISHER: Elsevier  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Syntheses of 5-membered cyclic carbonates from CO<sub>2</sub> and glycidyl  
 methacrylate or diglycidyl 1,2-cyclohexanedicarboxylate were investigated  
 in view of the characteristics of phase-transfer catalysts,  
 reaction mechanisms, and kinetics. Quaternary salts showed good  
 conversion of epoxide at 1 atm of CO<sub>2</sub> pressure. Among the  
 salts tested, those having a larger alkyl group and a more

nucleophilic counter-anion exhibited better catalytic activity. Kinetic studies in a semi-batch reactor, through which a slow stream of CO<sub>2</sub> was continuously passed, showed that the reaction rate was pseudo-first order with respect to **epoxide**. In a batch autoclave reactor with high CO<sub>2</sub> pressure, however, the reaction rate showed second order kinetics. The reaction was also carried out with an insol. phase-transfer **catalyst**, quaternary ammonium chloride anchored to **metal oxide**, to facilitate the recovery of **catalyst**.

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 32 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1998:30401 CAPLUS  
 DOCUMENT NUMBER: 128:115090  
 TITLE: Epoxidation of  $\beta$ -isophorone over a titania-silica aerogel: effect of **catalyst** pretreatments with bases  
 AUTHOR(S): Hutter, R.; Mallat, T.; Peterhans, A.; Baiker, A.  
 CORPORATE SOURCE: Department of Chemical Engineering and Industrial Chemistry, ETH-Zentrum, Swiss Federal Institute of Technology, Zurich, CH-8092, Switz.  
 SOURCE: Journal of Catalysis (1997), 172(2), 427-435  
 CODEN: JCTLA5; ISSN: 0021-9517  
 PUBLISHER: Academic Press  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 128:115090  
 GI



I

AB The epoxidn. of  $\beta$ -isophorone (I) with TBHP and an amorphous mesoporous titania-silica aerogel, containing 20 wt% TiO<sub>2</sub>, has been investigated. The nature of side reactions and the possibility of suppressing them by modification of the **catalyst** with bases was studied. The as-synthesized (unmodified but calcined) aerogel afforded only moderate selectivity to **epoxide** (36-87%) in the temperature range of 343-373 K. 4-Hydroxy-isophorone and  $\alpha$ -isophorone were the major byproducts, formed in isomerization reactions of product and reactant, resp., and catalyzed by acidic sites present on titania-silica. The selectivity to **epoxide** could be improved by pretreatment of the aerogel with neutral or weakly basic alkali or alkaline earth **metal salts**. Treatment of the aerogel with aqueous NaOAc followed by recalcination at 873 K afforded 94% selectivity at 90% peroxide conversion. Application of stronger bases was detrimental to the epoxidn. activity and selectivity. We propose that the improved selectivity is due to ion exchange between the weakly basic additive and the surface Bronsted sites (silanol groups). Neutral **salts** are preferentially anchored to the polar (acidic) surface sites and reduce their

accessibility for the more bulky and less polar reactant. The detrimental effect of strong bases is partly due to excess basicity of the **catalyst** after pretreatment, as the side reactions are also catalyzed by bases. Besides, prolonged treatment with NaOH partially hydrolyzed the Ti-O-Si bonds and restructured the material (titania microdomains in the silica matrix), as evidenced by FTIR and Uv-vis spectroscopy. The study of the **epoxide** ring opening reaction demonstrated the limited relevance of *ex situ* acidity measurements for predicting the role of acid sites in complex epoxidn. reactions.

REFERENCE COUNT: 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 33 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 4

ACCESSION NUMBER: 1998:93316 CAPLUS

DOCUMENT NUMBER: 128:192295

TITLE: The selective epoxidation of non-allylic olefins over **supported silver catalysts**

AUTHOR(S): Monnier, John R.

CORPORATE SOURCE: Chemicals Research Division, Research Laboratories, Eastman Chemical Company, Kingsport, TN, 37662, USA

SOURCE: Studies in Surface Science and Catalysis (1997), 110(3rd World Congress on Oxidation Catalysis, 1997), 135-149

CODEN: SSCTDM; ISSN: 0167-2991

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The epoxidn. of non-allylic, or kinetically-hindered, olefins can be carried out using **supported silver catalysts**. While epoxidn. does occur for unpromoted **catalysts**, the strength of olefin **epoxide** adsorption leads to low activity and selectivity, as well as irreversible **catalyst** fouling. The addition of certain **alkali metal salts**, such as CsCl, lowers the desorption energy of the olefin **epoxide**, permitting dramatic increases in activity, selectivity, and **catalyst** lifetime. In the case of butadiene, the addition of an optimum level of CsCl increases activity and selectivity from approx. 1% butadiene conversion and 50% selectivity for epoxybutene to 15% conversion and 95% selectivity, resp. Epoxidn. of butadiene occurs by addition of dissociatively-adsorbed oxygen to one of the localized C=bonds to form epoxybutene. The addition of oxygen across the terminal carbon atoms does not occur to any measurable extent. The direct participation of mol. oxygen can be ruled out based both on selectivity arguments as well as the kinetic model for the reaction. The kinetics imply a dual site mechanism. One site, which is unpromoted, serves as the site for butadiene adsorption, while the second site, which is promoted, functions as the site for dissociative oxygen adsorption and epoxybutene formation. Epoxybutene and derivs. represent the beginning of several new families of chems. that were either not available, or were too expensive, to be considered for large-scale, or even fine chemical, production. More than one hundred chems. have been prepared so far; several of these are in com. production at the semiworks scale.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 34 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1996:411086 CAPLUS

DOCUMENT NUMBER: 125:115433

TITLE: Preparation of **supported silver catalysts** with exceptional stability and high

selectivity at high conversions in vapor-phase  
oxidation of ethylene to **ethylene**  
**oxide**

INVENTOR(S): Rizkalla, Nabil  
PATENT ASSIGNEE(S): Scientific Design Company, Inc., USA  
SOURCE: U.S., 9 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5525740	A	19960611	US 1993-24247	19930301
US 5691269	A	19971125	US 1995-523441	19950905
PRIORITY APPLN. INFO.:				US 1993-24247 A1 19930301

AB **Silver catalysts** with exceptional stability and high selectivity at high conversions in the oxidation of ethylene (I) with mol. oxygen are prepared by impregnating a porous **support** (surface area 0.2-2.0 m<sup>2</sup>/g) with a hydrocarbon solution of silver **salt** of a neo acid, activating the impregnated **support** containing 3-20% Ag by heating at 250°-300° on a moving belt in an atmospheric containing less oxygen (≤2.5%) than air, and post impregnating the **support** with an alkali **metal**, preferably cesium. Because water at any stage and in any amount is detrimental to the performance of the final **catalyst**, the preparation is characterized as being substantially anhydrous with post disposition of cesium. Thus, an  $\alpha$ -alumina **support** having surface area 0.55 m<sup>2</sup>/g, pore volume 0.33 cm<sup>3</sup>/g, and medium pore diameter 1.5  $\mu$  was impregnated with a cumene solution of silver neodecanoate containing 26% Ag, heated for 2 min at <300° on a moving belt under N, impregnated for 2 h at room temperature in an anhydrous ethanolic solution contg 525 ppm cesium bicarbonate, superficially dried under N, and heated on a moving belt at 200°. A gas mixture containing 15% I, 7% O, and 78% inert gases (mainly N and CO<sub>2</sub>) was passed over the **catalyst** under 300 psi at a temperature needed to obtain an **ethylene oxide** productivity of 160 kg/h/m<sup>3</sup>. After 150, 400, 700, and 977 h the reactor temperature was 230°, 230°, 231°, and 231°, resp., and the selectivity was 82.3%, 82.3%, 82.3%, and 82.2%, resp.

L12 ANSWER 35 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1996:229073 CAPLUS  
DOCUMENT NUMBER: 124:344434  
TITLE: Preparation, activity and removal of polyurethane  
foam-**supported** double **metal**  
**cyanide catalysts** for **epoxide**  
polymerization to polyols  
INVENTOR(S): Le-Khac, Bi  
PATENT ASSIGNEE(S): Arco Chemical Technology, Inc., USA  
SOURCE: U.S., 8 pp., Cont.-in-part of U.S. 5,426,081.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 3  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
------------	------	------	-----------------	------

US 5498583	A	19960312	US 1994-345644	19941201
US 5426081	A	19950620	US 1993-173290	19931223
CA 2138063	AA	19950624	CA 1994-2138063	19941214
EP 659798	A1	19950628	EP 1994-309379	19941215
EP 659798	B1	19990414		
R: AT, BE, CH, DE, DK, FR, GB, GR, IE, IT, LI, NL, SE				
EP 903364	A2	19990324	EP 1998-118222	19941215
EP 903364	A3	20001206		
EP 903364	B1	20040602		
R: AT, BE, CH, DE, DK, FR, GB, GR, IT, LI, NL, SE, IE				
AT 178920	E	19990415	AT 1994-309379	19941215
AT 268347	E	20040615	AT 1998-118222	19941215
US 5525565	A	19960611	US 1994-356482	19941220
BR 9405222	A	19950808	BR 1994-5222	19941222
ZA 9410229	A	19950829	ZA 1994-10229	19941222
JP 07278275	A2	19951024	JP 1994-335467	19941222
JP 3369769	B2	20030120		
HU 70860	A2	19951128	HU 1994-3757	19941222
HU 215266	B	19981130		
RO 117798	B1	20020730	RO 1994-2084	19941222
AU 9481747	A1	19950629	AU 1994-81747	19941223
AU 677878	B2	19970508		
CN 1111255	A	19951108	CN 1994-119219	19941223
CN 1059681	B	20001220		
US 5523386	A	19960604	US 1995-453156	19950530
US 5527880	A	19960618	US 1995-453654	19950530
US 5596075	A	19970121	US 1996-618486	19960319
US 5641858	A	19970624	US 1996-713559	19960913
US 5652329	A	19970729	US 1996-713299	19960913
CN 1229805	A	19990929	CN 1999-102111	19990210
US 1993-173290 A2 19931223				
US 1994-345644 A 19941201				
EP 1994-309379 A3 19941215				
US 1994-356482 A3 19941220				
US 1995-453654 A3 19950530				
US 1996-618486 A3 19960319				

## PRIORITY APPLN. INFO.:

AB Polyurethane foam-supported double metal cyanide (DMC) catalysts for epoxide polymerization to polyether polyols have the general formula (Y)aM(CN)b(A)c [M = Fe(II), Fe(III), Co(II), Co(III), Cr(II), Cr(III), Mn(II), Mn(III), Ir(III), Ni(II), Rh(III), Ru(II), V(IV), and V(V); Y = an alkali or alkaline earth metal ion; A is an anion].

Water-soluble alkali or alkaline earth metal salts are combined with water-soluble transition metal cyanide salts (Co, Fe, Cr, Ir, and Ni salts are preferred) to produce a DMC. The crystalline or substantially amorphous DMC is further activated with excess organic complexing agent (i.e., tert-BuOH). A polyurethane foam is synthesized by a conventional method with the addition of DMC to the formulation. The supported DMC have higher catalytic activity and lower induction period than conventional DMC catalysts. After the epoxide is polymerized, the catalyst is removed from the polyether polyol by filtration and can be reused. Thus, propylene oxide is polymerized using Zn hexacyanocobaltate supported on polypropylene glycol glycerol ether (3:1)-TDI copolymer foam.

L12 ANSWER 36 OF 77 CAPLUS COPYRIGHT 2005 ACS on STM DUPLICATE 5

ACCESSION NUMBER: 1995:480394 CAPLUS

DOCUMENT NUMBER: 122:213916

TITLE: Process and metallosilicate catalysts for producing olefin oxides from olefins

INVENTOR(S): Sugita, Keisuke; Yagi, Toshikazu  
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 8 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 640598	A1	19950301	EP 1994-112274	19940805
EP 640598	B1	20001122		
R: BE, DE, FR, GB, IT, NL				
JP 07097378	A2	19950411	JP 1994-138809	19940621
US 5573989	A	19961112	US 1994-286337	19940805
US 5525741	A	19960611	US 1995-427589	19950424
PRIORITY APPLN. INFO.: JP 1993-196040 A 19930806				
US 1994-286337 A3 19940805				

OTHER SOURCE(S): CASREACT 122:213916

AB The title process comprises the gas-phase epoxidn. of an olefin (e.g., pentene, propylene) with mol. O in the presence of a crystalline metallosilicate (e.g., titanosilicates, etc.) **catalyst support** containing  $\geq 1$  salt selected from alkali metal salts of HNO<sub>3</sub>, alkaline earth metal salts of HNO<sub>3</sub>, Ag salts of HNO<sub>3</sub>, and Ag salts of HNO<sub>2</sub>, and produces **epoxides** (e.g., propyloxirane, methyloxirane) in high selectivity.

L12 ANSWER 37 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1995:902553 CAPLUS  
 DOCUMENT NUMBER: 123:285222  
 TITLE: Alkoxylation process and **catalysts**  
 INVENTOR(S): Deutscher, Kenneth Reginald; Ngian, Kiah Fah; Parr, Rodney Walter; Parris, David; Tasdelen, Esennur Elizabeth  
 PATENT ASSIGNEE(S): ICI Australia Operations Proprietary Ltd., Australia  
 SOURCE: PCT Int. Appl., 47 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9511212	A1	19950427	WO 1994-AU645	19941021
W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, US, UZ				
RW: KE, MW, SD, SZ, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
ZA 9408255	A	19950619	ZA 1994-8255	19941020
CA 2174238	AA	19950427	CA 1994-2174238	19941021
AU 9479857	A1	19950508	AU 1994-79857	19941021
AU 700707	B2	19990114		
EP 733032	A1	19960925	EP 1994-930870	19941021

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE			
BR 9407875	A 19961029	BR 1994-7875	19941021
JP 09504011	T2 19970422	JP 1994-511104	19941021
PRIORITY APPLN. INFO.:		AU 1993-1954	A 19931022
		AU 1993-1955	A 19931022
		WO 1994-AU645	W 19941021

AB The alkoxylation of organic compds. containing at least one active H (e.g., 1-decanol) comprises reacting the organic compound with an alkylene oxide (e.g., **ethylene oxide**) in the presence of a **catalyst** comprising the **salt** of  $\geq 1$  element chosen from alkali or alkaline earth **metals** or rare earth element and an oxy-acid of  $\geq 1$  element chosen from a Group IVB, Group VB, or Group VIB element(s) (e.g., La titanate) or mixts. and the **catalyst** is **supported** on an inert or active **support** and/or comprises hydrophobic groups. These **catalysts** produce compds. which have a narrow distribution of alkoxylate units and graphs demonstrating this are presented.

L12 ANSWER 38 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1995:641016 CAPLUS

DOCUMENT NUMBER: 123:199657

TITLE: **Catalysts for the manufacture of ethylene oxide**

INVENTOR(S): Evans, Wayne E.; Mesters, Carolus M. A. M.

PATENT ASSIGNEE(S): Shell Oil Co., USA

SOURCE: U.S., 14 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5418202	A	19950523	US 1993-176044	19931230
CA 2180153	AA	19950706	CA 1994-2180153	19941228
WO 9517957	A1	19950706	WO 1994-EP4341	19941228
W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, UZ, VN				
RW: KE, MW, SD, SZ, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9513711	A1	19950717	AU 1995-13711	19941228
AU 680713	B2	19970807		
EP 737099	A1	19961016	EP 1995-904541	19941228
EP 737099	B1	19980708		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE				
CN 1139886	A	19970108	CN 1994-194729	19941228
CN 1087191	B	20020710		
JP 09507159	T2	19970722	JP 1994-517787	19941228
AT 168042	E	19980715	AT 1995-904541	19941228
ES 2118551	T3	19980916	ES 1995-904541	19941228
SG 81885	A1	20010724	SG 1996-5905	19941228
US 5597773	A	19970128	US 1994-366069	19941229
US 5703253	A	19971230	US 1996-721643	19960926
PRIORITY APPLN. INFO.:			US 1993-176044	A 19931230
			WO 1994-EP4341	W 19941228

US 1994-366069

A3 19941229

AB A **catalyst** for the vapor phase production of **ethylene oxide** from ethylene and oxygen is prepared by impregnating a porous, refractory **support** having a surface area 0.05-10 m<sup>2</sup>/g with a solubilized catalytic amount of silver, a solubilized promoting amount of alkali **metal**, a solubilized promoting amount of rhenium, and a solubilized promoting amount of Group IVB **metal oxo salts**. The **catalyst** provide substantial initial activity improvement as well as long term selectivity and activity stability improvement over prior art rhenium promoted **catalyst**, without any loss of initial selectivity advantage.

L12 ANSWER 39 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1995:875140 CAPLUS  
 DOCUMENT NUMBER: 123:323237  
 TITLE: Noble **Metal** (RuIII, PdII, PtII) Substituted "Sandwich" Type Polyoxometalates: Preparation, Characterization, and Catalytic Activity in Oxidations of Alkanes and Alkenes by Peroxides  
 AUTHOR(S): Neumann, Ronny; Khenkin, Alexander M.  
 CORPORATE SOURCE: Graduate School of Applied Science, Hebrew University of Jerusalem, Jerusalem, 91904, Israel  
 SOURCE: Inorganic Chemistry (1995), 34(23), 5753-60  
 CODEN: INOCAJ; ISSN: 0020-1669  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The polyoxometalates substituted with noble **metals**, Pd(II), Pt(II) and Ru(III), K12{[WZnPdII2(H<sub>2</sub>O)<sub>2</sub>](ZnW9O<sub>34</sub>)<sub>2</sub>}·38H<sub>2</sub>O, K12{[WZnPtII2(H<sub>2</sub>O)<sub>2</sub>](ZnW9O<sub>34</sub>)<sub>2</sub>}·36H<sub>2</sub>O, and Na<sub>11</sub>{[WZnRuIII2(OH)(H<sub>2</sub>O)](ZnW9O<sub>34</sub>)<sub>2</sub>}·42H<sub>2</sub>O, were prepared by exchange of labile zinc atoms with noble **metal** atoms from the isostructural starting material, Na<sub>12</sub>{[WZn<sub>3</sub>(H<sub>2</sub>O)<sub>2</sub>](Zn<sub>2</sub>W9O<sub>34</sub>)<sub>2</sub>}·46H<sub>2</sub>O. The x-ray crystal structure of the ruthenium compound shows a structure compatible with a sandwich-type structure type with a WRuZnRu (Ru and W, Zn at opposing sides) ring between two B-XW9O<sub>34</sub> units. Magnetic susceptibility studies as a function of temperature provide convincing evidence of two ruthenium (III) centers with no magnetic interaction between them. The EPR spectrum is **supportive** of this formulation showing an anisotropic spectrum of a ruthenium (III) atom (S = 1/2) in an octahedral field. The IR and UV-vis spectra of the ruthenium compound as well as of the diamagnetic palladium and platinum compds. are consistent with an isostructural series of compds. The water soluble polyoxometalates may be extracted into an organic phase, e.g. 1,2-dichloroethane, by the addition of methyltricaprylammonium chloride to form their quaternary ammonium **salts**. The catalytic activity of these compds. was tested for the oxidation of alkenes and alkanes using aqueous 30% hydrogen peroxide and 70% tert-Bu hydroperoxide as oxidants. The alkene oxidation proceeded in high reactivity and moderate selectivity to the **epoxide** product using 30% H<sub>2</sub>O<sub>2</sub>. Kinetic profiles as well as UV-vis and IR spectra before, during and after the reaction indicate that the **catalysts** are stable throughout the reaction. Formation of **epoxides** rather than ketonization in the reaction of terminal alkenes as well as low reactivity with iodosobenzene indicates that the reaction is tungsten centered and not noble **metal** centered. Oxidation of alkenes with tert-Bu hydroperoxide gave mostly allylic oxidation and/or addition of tert-Bu alc. to the double bond. Oxidation of cyclic alkanes such as cyclohexane and adamantane was successful with tert-Bu hydroperoxide with catalytic activity 10 times higher than previously found for transition

metal substituted Keggin compds. Ratios of hydroxylation of adamantane at tertiary vs secondary positions indicates different active species in the palladium-, platinum-, and ruthenium substituted-polyoxometalates.

L12 ANSWER 40 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1995:350927 CAPLUS  
 DOCUMENT NUMBER: 122:105639  
 TITLE: Process for preparing silver catalyst for ethylene epoxidation  
 INVENTOR(S): Rizkalla, Nabil  
 PATENT ASSIGNEE(S): Scientific Design Co., Inc., USA  
 SOURCE: U.S., 8 pp. Division of U.S. Ser. No. 24,477  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5374748	A	19941220	US 1994-222016	19940404
US 6184175	B1	20010206	US 1994-195096	19940214
CA 2196060	AA	19960215	CA 1994-2196060	19940804
WO 9604074	A1	19960215	WO 1994-US8833	19940804
W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LT, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, UZ, VN				
RW: KE, MW, SD, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9475546	A1	19960304	AU 1994-75546	19940804
AU 682207	B2	19970925		
CN 1134674	A	19961030	CN 1994-194042	19940804
CN 1071596	B	20010926		
EP 804289	A1	19971105	EP 1994-925737	19940804
EP 804289	B1	20031022		
R: BE, DE, GB, IT, NL				
JP 10503118	T2	19980324	JP 1994-509418	19940804
RU 2133642	C1	19990727	RU 1996-108786	19940804
CA 2196059	AA	19960222	CA 1994-2196059	19940809
CA 2196059	C	20041116		
WO 9604989	A1	19960222	WO 1994-US8950	19940809
W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LT, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, UZ, VN				
RW: KE, MW, SD, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9475583	A1	19960307	AU 1994-75583	19940809
NL 9420033	A	19960603	NL 1994-20033	19940809
GB 2297278	A1	19960731	GB 1996-6642	19940809
GB 2297278	B2	19980520		
DE 4481119	T	19961121	DE 1994-4481119	19940809
US 5444034	A	19950822	US 1995-370550	19950109
US 5602070	A	19970211	US 1995-436001	19950505
PRIORITY APPLN. INFO.:			US 1993-24477	A3 19930301
			WO 1994-US8833	W 19940804
			WO 1994-US8950	W 19940809
			US 1995-370550	A1 19950109

AB An improved Ag catalyst for the oxidation of ethylene with mol. O

is made by impregnating a porous **support** with a Ag salt of an acid; subjecting the impregnated **support** to a multi-stage activation in an atmospheric containing less O than air by heating at a 1st temperature

150-200° for less than an h, heating at a 2nd temperature  
 200-300°C for less than 1 h, heating at a 3rd temperature  
 300-400°C for less than 1 h and finally heating at a 4th temperature  
 400-500°C; and post impregnating the **support** with an alkali metal, preferably cesium, from an anhydrous alc. solution followed by washing with alc. solvent and rapid drying to produce a finished **catalyst** having from 1-6 + 10-3 gew of the alkali metal per kg of **catalyst**.  $\alpha$ -Alumina, and Ag neodecanoate containing 26% Ag ere mixed for 30 min, the deposition of of Ag was induced bt heating at 150°, the residence time of **catalyst** in the heated was 2 min and the process repeated at 200, 250, 300 and 400°. The **catalyst** was impregnated for 2 h at room temperature in EtOH containing cesium bicarbonate, and after drying the **catalyst**, ethylene, O and CO<sub>2</sub> were flowed over the **catalyst** >300 psi to give **ethylene oxide**.

L12 ANSWER 41 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1994:8418 CAPLUS

DOCUMENT NUMBER: 120:8418

TITLE: Addition reaction of epoxy compounds with carbon dioxide using insoluble polymer-supported crown ether complexes as **catalysts**

AUTHOR(S): Yamashita, Jun; Kameyama, Atsushi; Nishikubo, Tadatomi; Fukuda, Wakiti; Tomoi, Masao

CORPORATE SOURCE: Fac. Engin., Kanagawa Univ., Yokohama, 221, Japan

SOURCE: Kobunshi Ronbunshu (1993), 50(7), 577-82

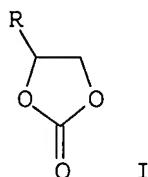
CODEN: KBRBA3; ISSN: 0386-2186

DOCUMENT TYPE: Journal

LANGUAGE: Japanese

OTHER SOURCE(S): CASREACT 120:8418

GI



AB Synthesis of cyclic carbonates I (R = PhOCH<sub>2</sub>, BuOCH<sub>2</sub>, H<sub>2</sub>C:CHCH<sub>2</sub>OCH<sub>2</sub>, Ph) by add. of epoxy compds. with carbon dioxide using polystyrene-bound crown ether and **metal salts as catalysts** was investigated. The addition reaction proceeded very smoothly in aprotic solvents such as DMF, although the reaction did not proceed in common organic solvents. Although the reaction proceeded in aprotic solvents by addition of only **metal salts as catalysts**, the yield of produced cyclic carbonates increased by further addition of polymer-supported crown ethers. Furthermore, the reuse of polymer-supported crown ether was also investigated. The polymer-supported crown ether can be reused without any degrading the catalytic activity, after **metal salts** were added to the each recovered polymer-supported crown ether.

L12 ANSWER 42 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 6  
 ACCESSION NUMBER: 1992:427411 CAPLUS  
 DOCUMENT NUMBER: 117:27411  
 TITLE: Method for preparing **catalyst** for  
**ethylene oxide** production  
 INVENTOR(S): Parfenov, A. N.; Sokolov, V. S.; Davydov, V. A.;  
 Chesnokov, B. B.; Parfenov, V. N.  
 PATENT ASSIGNEE(S): State Scientific-Research and Design Institute of the  
 Chlorine Industry, USSR  
 SOURCE: U.S.S.R. From: Otkrytiya, Izobret. 1991, (39), 34-5.  
 CODEN: URXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Russian  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SU 1685510	A1	19911023	SU 1989-4714289	19890703
PRIORITY APPLN. INFO.:			SU 1989-4714289	19890703

AB In preparing title **catalyst** by treating an inert **catalyst** support by an ammoniacal Ag salt complex, by a mixture of alkali metal salts, and by a compound with a Cl-containing anion, followed by drying, the activity of the title **catalyst** was improved by carrying out the treatment in the presence of a soluble salt of silicic acid and a salt of an alkaline earth metal, e.g., Ca, Ba, or Cd. After the drying step, the support was addnl. treated by a mixture of alkaline earth metal salts and a surfactant.

L12 ANSWER 43 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1991:472429 CAPLUS  
 DOCUMENT NUMBER: 115:72429  
 TITLE: Manufacture of silver **catalysts** for  
 oxidation of ethylene to **ethylene oxide**  
 INVENTOR(S): Liu, Kintoken H.  
 PATENT ASSIGNEE(S): Scientific Design Co. Inc., USA  
 SOURCE: U.S., 7 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5008413	A	19910416	US 1989-424932	19891023
PRIORITY APPLN. INFO.:			US 1989-424932	19891023

AB Highly active, selective, stable **catalysts** for the title reaction are manufactured by (a) impregnating a porous support with surface area 0.2-2 m<sup>2</sup>/g with a hydrocarbon solution of a Ag salt of a C $\geq$ 7 neo acid sufficient to provide 3-25% Ag on the support, (b) separating the impregnated support from the solution, (c) activating the impregnated support by heating in air, (d) impregnating the activated **catalysts** with a solution containing 650-8000 ppm Na, K, Cs, or Rb compound to depress the activity of the activated **catalyst**, and heating the deactivated **catalyst**

0.1-4.5 h at  $\geq 450^\circ$  and steady state in an inert atmospheric. Thus, impregnating Noritake (surface area 0.85-0.95 m<sup>2</sup>/g, Na<sub>2</sub>O content 0.23-0.26%) with a Ag neodecanoate-cumene solution, heating the impregnated support 1 min at 400° (Ag content 9.19%), impregnating the Ag-containing support with an ethanolic aqueous CsOH solution, drying (Cs content 2000 ppm), and heating the resulting impregnated support 0.25-1.5 h at a steady state and 500-700° under N gave a catalyst. Oxidation of C<sub>2</sub>H<sub>4</sub> with a O-CO<sub>2</sub>-N mixture in the presence of this catalyst and ethylene dichloride at 224° gave a product containing 1.5 volume% ethylene oxide at selectivity 81.3%.

L12 ANSWER 44 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1991:472431 CAPLUS  
 DOCUMENT NUMBER: 115:72431  
 TITLE: Epoxidation catalysts containing high silver content  
 INVENTOR(S): Thorsteinson, Erlind Magnus; Bhasin, Madan Mohan; Seyedmonir, Seyed Razi  
 PATENT ASSIGNEE(S): Union Carbide Chemicals and Plastics Co., Inc., USA  
 SOURCE: Eur. Pat. Appl., 64 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 425020	A1	19910502	EP 1990-202758	19901017
EP 425020	B1	19990224		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
US 5187140	A	19930216	US 1990-556828	19900723
CA 2027868	AA	19910419	CA 1990-2027868	19901017
CA 2027868	C	19960423		
AU 9064666	A1	19910426	AU 1990-64666	19901017
AU 639946	B2	19930812		
ZA 9008308	A	19910828	ZA 1990-8308	19901017
JP 03207447	A2	19910910	JP 1990-276568	19901017
JP 3030512	B2	20000410		
BR 9005240	A	19910917	BR 1990-5240	19901017
CN 1060839	A	19920506	CN 1990-109457	19901017
RU 2073564	C1	19970220	RU 1990-4831746	19901017
AT 176907	E	19990315	AT 1990-202758	19901017
AU 9350367	A1	19940113	AU 1993-50367	19931101
PRIORITY APPLN. INFO.:			US 1989-423197	A 19891018
			US 1990-556828	A 19900723

AB Ag-containing ( $\geq 30\%$ ) catalysts on high surface area ( $\geq 0.7$  m<sup>2</sup>/g), high porosity (0.5 cm<sup>3</sup>/g) supports are useful for epoxidn. of alkenes. A solution containing Ag<sub>2</sub>O 30.66, ethylenediamine

17.48, oxalic acid 17.50, monoethanolamine 6.13, and H<sub>2</sub>O 17.32 g was impregnated into alumina (1.6 m<sup>2</sup>/g, water pore volume 78.4%) and later impregnated with 2.12 g KNO<sub>3</sub> in 100 g H<sub>2</sub>O to give a catalyst having Ag content 35% and K content 0.33%. Epoxidn. of C<sub>2</sub>H<sub>4</sub> (30%) at 240°/8000 GHSV in the presence of 8% O<sub>2</sub>, 5 ppm EtCl, 5 ppm NO, and catalyst gave ethylene oxide conversion 1.6% and catalyst efficiency 90%.

L12 ANSWER 45 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1991:493158 CAPLUS  
 DOCUMENT NUMBER: 115:93158  
 TITLE: Preparation of silver **catalysts** for the epoxidation of ethylene  
 INVENTOR(S): Geyer, Reinhard; Thaetner, Richard; Lambrecht, Wolfgang; Ohl, Klaus; Prag, Manfred; Hattwig, Manfred; Lunau, Juergen; Weitze, Diethard; Walkowski, Lothar; et al.  
 PATENT ASSIGNEE(S): Leuna-Werke A.-G., Ger. Dem. Rep.  
 SOURCE: Ger. (East), 5 pp.  
 CODEN: GEXXA8  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DD 289413	A7	19910502	DD 1982-242372	19820810
PRIORITY APPLN. INFO.:			DD 1982-242372	19820810

AB The title **catalysts**, with high activity, selectivity, and durability are prepared reproducibly by impregnating porous **supports** with solns. of Ag **salts** decomposing at 423-523, excess organic acids including lactic acid (I) and lower carboxylic acids, alkali **metals**, and alkaline earth **metals**. A solution of 1.16:1 I-Ag oxide mixture, H<sub>2</sub>O<sub>2</sub>, 3:1 I-AcOH (Ag-acid ratio 1.1:1), Ba(OAc)<sub>2</sub>, and CsOAc (Ba-Cs-acid ratio 0.0058:0.00057:1) was mixed with porous aluminosilicate microspheres at 355-365 K over 30 min and the **catalyst** was in N-air over 3 h to and 3 h at 623 K to give a **catalyst** containing 14.8% Ag. Passing 15:7:78 C<sub>2</sub>H<sub>4</sub>-O-N over this **catalyst** at space volume 2200/h and 0.6 MPa gave a selectivity for **ethylene oxide** (C<sub>2</sub>H<sub>4</sub> conversion 10-11%) of 77.0% at 508 K, or 75.0% at 520 K after 4 h at 793 K in air.

L12 ANSWER 46 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1992:408656 CAPLUS  
 DOCUMENT NUMBER: 117:8656  
 TITLE: **Catalysts** for epoxidation of olefins  
 INVENTOR(S): Pearce, John R.; Thorsteinson, Erlind M.; Warren, Barbara K.  
 PATENT ASSIGNEE(S): Union Carbide Corp., USA  
 SOURCE: Can., 56 pp.  
 CODEN: CAXXA4  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CA 1286688	A1	19910723	CA 1986-515863	19860813
PRIORITY APPLN. INFO.:			US 1985-769696	A 19850827

AB C<sub>2</sub>12 olefins are epoxidized by O-containing gases in the presence of organic halides, redox-half reaction pairs (polyvalent **metal oxides**), **supported Ag catalysts** containing **salts** of oxyanions of polyvalent elements), CO<sub>2</sub>, and H<sub>2</sub>O. Passing 30:8:62 C<sub>2</sub>H<sub>4</sub>-O-N containing 5 ppm NO and 5 ppm EtCl with 0.25-1.5% H<sub>2</sub>O and ≤7% CO<sub>2</sub> over a **catalyst** prepared from ethylenediamine, oxalic acid,

Ag<sub>20</sub>, HOCH<sub>2</sub>CH<sub>2</sub>NH<sub>2</sub> and KNO<sub>3</sub> on  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> (Ag 17.0 and K 0.31%) at space velocity 8000/h, 240°, and 275 psig gave oxirane with 85.9% efficiency and activity 5.7 lb/ft<sup>3</sup>-/h.

L12 ANSWER 47 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 7  
 ACCESSION NUMBER: 1990:424664 CAPLUS  
 DOCUMENT NUMBER: 113:24664  
 TITLE: Process and catalysts for the epoxidation of ethylene to ethylene oxide  
 INVENTOR(S): Bhasin, Madan M.  
 PATENT ASSIGNEE(S): Union Carbide Chemicals and Plastics Co., Inc., USA  
 SOURCE: U.S., 19 pp. Cont.-in-part of U.S. Ser. No. 18,809, abandoned.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4908343	A	19900313	US 1988-251573	19881003
PRIORITY APPLN. INFO.:			US 1984-640269	B1 19840813
			US 1987-18809	B2 19870220

AB Ethylene oxide is prepared by the epoxidn. of ethylene in the presence of a catalyst comprising an impregnated Ag metal on an inert, refractory solid support and an efficiency-enhancing amount of a mixture of (A) a Cs salt of an oxy anion of a Group IIIB-VIIB element, and (B)  $\geq 1$  alkali metal salt and an alkaline earth metal salt. These catalysts have a high ethylene conversion activity, a high ethylene oxide selectivity, and have a unique unsensitivity to gas-phase inhibitors. Thus, a supported catalyst containing 13.25 Ag, 92 ppm Cs (from CsMnO<sub>4</sub>) and 27 ppm KMnO<sub>4</sub>, was contacted with O and C<sub>2</sub>H<sub>4</sub> at 249°, producing ethylene oxide with 79.6% efficiency.

L12 ANSWER 48 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1990:631213 CAPLUS  
 DOCUMENT NUMBER: 113:231213  
 TITLE: Monoepoxidation of vinylheterocycles and of styrene derivatives by molecular oxygen  
 INVENTOR(S): Monnier, John Robert; Muehlbauer, Peter James  
 PATENT ASSIGNEE(S): Eastman Kodak Co., USA  
 SOURCE: Eur. Pat. Appl., 17 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 369902	A1	19900523	EP 1989-420435	19891113
R: ES, GR				
US 5145968	A	19920908	US 1989-394023	19890815
CA 2002242	AA	19900514	CA 1989-2002242	19891106
CA 2002242	C	20000905		
WO 9005726	A1	19900531	WO 1989-US5219	19891113

W: JP				
RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
EP 442947	A1	19910828	EP 1989-912939	19891113
EP 442947	B1	19960207		
R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
JP 04501564	T2	19920319	JP 1990-500457	19891113
JP 2997039	B2	20000111		
AT 133946	E	19960215	AT 1989-912939	19891113
ES 2082792	T3	19960401	ES 1989-912939	19891113
PRIORITY APPLN. INFO.:				
		US 1988-270332	A 19881114	
		US 1989-394023	A 19890815	
		WO 1989-US5219	W 19891113	

OTHER SOURCE(S): MARPAT 113:231213

AB ArRC:CRR [Ar = (substituted) aryl, heteroaryl having 5-20 C atoms; R = H, (substituted) hydrocarbyl having 1-20 C atoms, with the proviso that there are no hydrogen atoms allylic to a double bond in the structure], were selectively monoepoxidized. The process comprises contacting an arylvinyl compound with an O-containing gas at a molar ratio of arylvinyl compound to O

of

0.01-30 in the presence of a silver-containing catalyst containing in the range of 0.001-10 weight%, based on the total weight of catalyst, including support, of at least one promoter selected from the salts or oxides of alkali metals, the salts or oxides of alkaline earth metals, excluding barium peroxide. The above reaction is carried out at 0.1-100 atm and 100-325°. Oxidation of 4-vinylpyridine with an O-containing He gas stream over 12% Ag/Al2O3 catalyst promoted by CsCl and CsNO3 gave 4-vinylpyridine epoxide with 21.4% conversion of 4-vinylpyridine.

L12 ANSWER 49 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1990:199309 CAPLUS  
 DOCUMENT NUMBER: 112:199309  
 TITLE: Catalyst for oxidation of ethylene to ethylene oxide  
 INVENTOR(S): Liu, Kindtken H.  
 PATENT ASSIGNEE(S): Scientific Design Co., Inc., USA  
 SOURCE: Eur. Pat. Appl., 9 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 349229	A1	19900103	EP 1989-306432	19890626
EP 349229	B1	19940921		
R: BE, DE, ES, FR, GB, IT, NL, SE				
US 4897376	A	19900130	US 1988-212304	19880627
AU 8935211	A1	19900104	AU 1989-35211	19890525
AU 614371	B2	19910829		
CA 1333591	A1	19941220	CA 1989-602437	19890612
RO 105660	B1	19921130	RO 1989-140355	19890621
DD 283950	A5	19901031	DD 1989-329872	19890622
BR 8903122	A	19900206	BR 1989-3122	19890626
RU 2012397	C1	19940515	RU 1989-4614497	19890626
ES 2060771	T3	19941201	ES 1989-306432	19890626
JP 02048040	A2	19900216	JP 1989-165129	19890627
JP 07047124	B4	19950524		

CN 1040157	A	19900307	CN 1989-106410	19890703
CN 1023076	B	19931215		

PRIORITY APPLN. INFO.:	US 1988-212304	A 19880627
------------------------	----------------	------------

OTHER SOURCE(S):	CASREACT 112:199309
------------------	---------------------

AB A **catalyst** for vapor-phase oxidation of C<sub>2</sub>H<sub>4</sub> is made by impregnating a **support** with a Ag **salt** prepared by reacting a Ag compound with a neo-acid in a hydrocarbon solvent, drying and activating the resultant precatalyst by heating in air, impregnating with 800-5000 ppm alkali **metals** to deactivate the **catalyst** to form a precursor, and heating the precursor at 450-700° for 0.1-4.5 h. Thus, 660.21 g Noritake **support** (pore volume 0.3-0.4 mL/g, Na<sub>2</sub>O 0.23-0.26%) was preheated to 85° and impregnated with 271.92 g 2.2:1 Ag neodecanoate-cummene solution at 80° for 30 min, heated at 400°, cooled and impregnated with a CsOH water-EtOH solution, and heated at 600° for 45 min to give a **catalyst**. containing 1248 ppm Cs. Heating 36 g this **catalyst** with a feed containing O<sub>2</sub> 7, CO<sub>2</sub> 15, C<sub>2</sub>H<sub>4</sub> 15, N 70%, and 0.6 ppm C<sub>2</sub>H<sub>4</sub>Cl<sub>2</sub> at 200-300° and gas hourly space velocity of 5500 h<sup>-1</sup> gave an outlet concentration of 1.5% (volume) C<sub>2</sub>H<sub>4</sub>O.

L12 ANSWER 50 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1990:101172 CAPLUS

DOCUMENT NUMBER: 112:101172

TITLE: Process and **catalysts** for the selective epoxidation of olefins larger than ethylene with oxygen

INVENTOR(S): Monnier, John Robert; Muehlbauer, Peter James

PATENT ASSIGNEE(S): Eastman Kodak Co., USA

SOURCE: Eur. Pat. Appl., 38 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 326392	A1	19890802	EP 1989-300776	19890127
EP 326392	B1	19940309		
R: ES, GR				
US 4897498	A	19900130	US 1988-149297	19880128
US 4950773	A	19900821	US 1988-292589	19881230
CA 1338268	A1	19960423	CA 1989-588759	19890120
WO 8907101	A1	19890810	WO 1989-US341	19890127
W: AU, BR, JP, KR				
RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
AU 8931825	A1	19890825	AU 1989-31825	19890127
AU 618792	B2	19920109		
EP 397793	A1	19901122	EP 1989-902677	19890127
R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
BR 8907211	A	19910305	BR 1989-7211	19890127
JP 03502330	T2	19910530	JP 1989-502490	19890127
JP 2854059	B2	19990203		
AT 102615	E	19940315	AT 1989-300776	19890127
ES 2051994	T3	19940701	ES 1989-300776	19890127
CN 1036012	A	19891004	CN 1989-101635	19890128
CN 1023225	B	19931222		
PRIORITY APPLN. INFO.:			US 1988-149297	A 19880128
			US 1988-292589	A 19881230

EP 1989-300776 A 19890127  
 WO 1989-US341 A 19890127

OTHER SOURCE(S): CASREACT 112:101172  
 AB Olefins having chain lengths longer than C2H4 are selectively epoxidized in the presence of a Ag **supported catalyst** with an (in)organic halide promoter using an O-containing gas mixture or O. Thus, a 17% Ag on Al2O3 **catalyst** promoted with 1.0 mg CsCl/g **catalyst** (1.77 g total **catalyst** weight) was contacted with 6 mL/min of a He-tert-butylethylene (I)-O (200:1:200 molar ratio) gas mixture at 250°, producing tert-butylethylene oxide in >95% selectivity with 1.5% I conversion.

L12 ANSWER 51 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1989:559535 CAPLUS  
 DOCUMENT NUMBER: 111:159535  
 TITLE: A process for removing nitrogen oxides from waste gases and a **catalyst** for the process  
 INVENTOR(S): Tachi, Takahiro; Kato, Akira; Kawagoshi, Hiroshi; Yamashita, Hisao; Kamo, Tomoichi; Matsuda, Shinpei; Kato, Yasuyoshi; Nakajima, Fumito  
 PATENT ASSIGNEE(S): Babcock-Hitachi K. K., Japan  
 SOURCE: Eur. Pat. Appl., 9 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 317293	A2	19890524	EP 1988-310823	19881116
EP 317293	A3	19891025		
EP 317293	B1	19960522		
R: AT, DE, FR, GB, IT				
JP 01130720	A2	19890523	JP 1987-289100	19871116
US 4946661	A	19900807	US 1988-271540	19881115
AT 138285	E	19960615	AT 1988-310823	19881116
PRIORITY APPLN. INFO.:			JP 1987-289100	A 19871116

AB NOx are removed from waste gases by catalytic reduction with NH3 using a poisoning-resistant **catalyst** comprising TiO2 which **supports** a denitration-active component, especially a **metal** oxide, where the average pore diameter of the TiO2 is  $\leq$ 10,000 Å and the proportion of pores with pore diameter 400-5000 Å is  $\geq$ 50%. The **catalyst** is prepared by calcining an aqueous TiO2 or Ti hydroxide sol (optionally containing a polymer compound), adding a denitration-active component, and calcining the resulting mixture. The pore size distribution of the **catalyst** protects it from poisoning by volatile **metal** compds., such as As2O3, and SO3.

L12 ANSWER 52 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1989:115508 CAPLUS  
 DOCUMENT NUMBER: 110:115508  
 TITLE: Process for improving the operating efficiency of aged **supported** silver epoxidation **catalysts**  
 INVENTOR(S): Kripylo, Peter; Beck, Lothar; Linck, Willi; Feller, Klaus; Moegling, Lutz; Hellmann, Juergen  
 PATENT ASSIGNEE(S): VEB Chemische Werk, Ger. Dem. Rep.  
 SOURCE: Ger. (East), 6 pp.

CODEN: GEXXA8

DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DD 258514	A3	19880727	DD 1981-229235	19810512
PRIORITY APPLN. INFO.:			DD 1981-229235	19810512

AB The operating efficiency of **supported** silver epoxidn. **catalysts**, useful for the direct oxidation of C<sub>2</sub>H<sub>4</sub> to **ethylene oxide**, is improved by contacting **catalyst** with (A) a wash solution comprising water and/or organic solvent, and/or (B) an impregnation solution consisting of water and/or an organic solvent, which solution contains a small quantity of a **salt** (preferably an alkali **metal** and/or alkaline earth **metal**), and contacting the treated **catalyst** with a reducing compound, preferably a reducing carbonyl compound. A molar ratio of Ag (in the **catalyst**) to reducing carbonyl groups or equivalent in the reducing compds. of 1:0.0001-0.1 is used. A 3-yr-old **supported** Ag epoxidn. **catalyst** (0.1 kg; Ag content 14.5%) was poured into a solution of 0.25 kg MeOH and 0.2 x 10<sup>-3</sup> kg AcH. After 1 h the **catalyst** was separated by decantation, and dried 3 h at 443 K. A **catalyst** was contacted with a gas mixture containing 7.0% O, 15.0% C<sub>2</sub>H<sub>4</sub>, 78.0% N and 1.0 ppm 1,2-dichloroethane at 522 K, producing **ethylene oxide** in 70.5 mol% selectivity (C<sub>2</sub>H<sub>4</sub> conversion 10 mol%).

L12 ANSWER 53 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 8

ACCESSION NUMBER: 1987:409321 CAPLUS  
 DOCUMENT NUMBER: 107:9321  
 TITLE: Preparation of silver-containing **catalyst**  
 PATENT ASSIGNEE(S): Shell Internationale Research Maatschappij B. V., Neth.  
 SOURCE: Neth. Appl., 12 pp.  
 CODEN: NAXXAN  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Dutch  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
NL 8501862	A	19870116	NL 1985-1862	19850628
US 4728634	A	19880301	US 1986-874910	19860616
PRIORITY APPLN. INFO.:			NL 1985-1862	A 19850628

AB Ag-containing **catalysts**, for manufacture of **ethylene oxide**, containing a promoter are **supported** on an Al<sub>2</sub>O<sub>3</sub> support prepared by mixing an Al compound with an **alkali metal salt** or hydroxide and a Si compound followed by calcination. The Al compound is suitably Al oxide or hydrated Al oxide, and the Si compound is SiO<sub>2</sub>; the **alkali metal salt** is chosen from fluorides, chlorides, nitrates, and sulfates, especially CsF or CsNO<sub>3</sub>. Component ratios are 0.001-0.1:1 (at.) **alkali metal salt**-Al, and 0.1-0.5:1 (at.) Si-Al. The Ag component, present as 1-25% Ag<sub>0</sub>, is reduced to Ag<sub>0</sub> prior to use. A **catalyst** precursor mixt. of CsF 0.89, Al<sub>2</sub>O<sub>3</sub>.H<sub>2</sub>O 133.3, and SiO<sub>2</sub> 25 g was kneaded, dried at 120° for 3 h, and calcined (up to

1600°) to yield a **support** contg. Cs-Al (at. ratio) 0.003:1 and Cs-Al (at.) 0.015:1, with pore vol. 0.26 mL/g and av. pore diam. 1.6  $\mu$ . The **support** was impregnated with aq. Ag oxalate-ethylenediamine-CsOH soln. to give a **catalyst** contg. 13% Ag and 490 ppm Cs. Gas contg. 30 mol% C<sub>2</sub>H<sub>4</sub> and 8.5 mol% O was reacted over the **catalyst** at 3300 L-1 vol. space velocity and 15 bars, resulting in 81.3% selectivity to **ethylene oxide** at 40% O conversion, compared with 80.8% selectivity for a com. **catalyst**.

L12 ANSWER 54 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1987:498597 CAPLUS  
 DOCUMENT NUMBER: 107:98597  
 TITLE: Silver neodecanoate-containing epoxidation **catalysts**  
 INVENTOR(S): Becker, Mitchell; Liu, Kindtoken H.  
 PATENT ASSIGNEE(S): Halcon SD Group, Inc., USA  
 SOURCE: U.S., 6 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4663303	A	19870505	US 1986-832099	19860224
EP 236025	A2	19870909	EP 1987-301477	19870220
EP 236025	A3	19871119		
EP 236025	B1	19901219		
R: BE, DE, FR, GB, IT, NL				
JP 62241553	A2	19871022	JP 1987-38119	19870223
BR 8700848	A	19871215	BR 1987-848	19870223
DD 255286	A5	19880330	DD 1987-300126	19870224
DD 268694	A5	19890607	DD 1987-314739	19870224
US 5342973	A	19940830	US 1991-700894	19910513
JP 07324080	A2	19951212	JP 1995-137520	19950512
JP 2510959	B2	19960626		

PRIORITY APPLN. INFO.: US 1986-832099 A 19860224  
 US 1987-46680 B1 19870507

AB The title **catalysts** useful for the epoxidn. of C<sub>2</sub>H<sub>4</sub> with O are prepared by mixing the stoichiometric amount of Ag compound with a unit amount of a C $\geq$ 7 neo-carboxylic acid, boiling the mixture at 0.01-0.08 bar to  $\geq$ 90% acid conversion to the corresponding Ag **salt**, impregnating a porous **support** (surface area 0.2-1.5 m<sup>2</sup>/g) with Ag **salt**, and activating the impregnated **support** by heating at  $\leq$ 350°. A Dean-Stark apparatus was charged with neodecanoic acid and cumene, the flask heated to .apprx.45°, Ag20 powder was added over 20 min, the pressure reduced to 0.027 bar, the contents of the flask slowly heated to .apprx.75°, H<sub>2</sub>O removed, the solution filtered hot, and 71 g of the Ag neodecanoate-cumene solution (80°) was used to impregnate 210 g of **support** material (preheated to 85°) for 30 min. The saturated **support** was activated by placing it on a moving wire-mesh belt and passing it through a zone where, for 1 min, it was exposed to an upward falling stream of 500° air. After cooling, the **catalyst** was impregnated with an aqueous ethanolic CsOH solution (Cs content 525 ppm) for 2 h, producing a

**catalyst** containing 8.23% Ag and 434 ppm Cs. A tubular reactor was charged with 36 g of the **catalyst**, the reactor operated at 241°/21.69 bars, fed a mixture of O<sub>2</sub> 7, CO 8, C<sub>2</sub>H<sub>4</sub> 15, N 70%, and methylenedichloride 0.6 ppm at velocity 550 h<sup>-1</sup>. Anal. of the product stream indicated the presence of 1.5 volume% **ethylene oxide** (I) with 80.5% I selectivity.

L12 ANSWER 55 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1987:69145 CAPLUS  
 DOCUMENT NUMBER: 106:69145  
 TITLE: Preparation of a silver-containing **catalyst** and its use in **ethylene oxide** production  
 INVENTOR(S): Boxhoorn, Gosse; Klazinga, Aan Hendrik; Velthuis, Otto Mente  
 PATENT ASSIGNEE(S): Shell Internationale Research Maatschappij B. V., Neth.  
 SOURCE: Eur. Pat. Appl., 7 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 207541	A1	19870107	EP 1986-200951	19860530
EP 207541	B1	19891011		
R: BE, CH, DE, CA 1276619	FR, GB, IT, LI, NL, SE			
CA 1276619	A1	19901120	CA 1986-510764	19860604
CN 86104393	A	19861224	CN 1986-104393	19860626
CN 1009829	B	19901003		
DK 8603044	A	19861229	DK 1986-3044	19860626
DK 161057	B	19910527		
DK 161057	C	19911118		
AU 8659291	A1	19870108	AU 1986-59291	19860626
AU 580880	B2	19890202		
JP 62004445	A2	19870110	JP 1986-148362	19860626
JP 07075669	B4	19950816		
CN 86104383	A	19870204	CN 1986-104383	19860626
CN 1009827	B	19901003		
BR 8602943	A	19870217	BR 1986-2943	19860626
ZA 8604756	A	19870225	ZA 1986-4756	19860626
CS 266592	B2	19900112	CS 1986-4763	19860626
PL 151035	B1	19900731	PL 1986-260292	19860626
CA 1292974	A1	19911210	CA 1987-533855	19870403

PRIORITY APPLN. INFO.: NL 1985-1865 A 19850628  
 AB In a process for the preparation of an Ag-containing **catalyst**, suitable for the oxidation of C<sub>2</sub>H<sub>4</sub> to **ethylene oxide**, an Ag compound is applied to a carrier, after which the Ag compound is reduced to metallic Ag; the carrier is prepared by mixing an Al compound with a Cl compound and calcining the obtained mixture HCl (35 weight%) 21 g was diluted with H<sub>2</sub>O 77

mL and mixed with Al<sub>2</sub>O<sub>3</sub>.H<sub>2</sub>O (Kaiser 26102) 55 g in H<sub>2</sub>O 100 g; the mixture was kneaded for 15 min. Al<sub>2</sub>O<sub>3</sub>.H<sub>2</sub>O 220 g and H<sub>2</sub>O 50 mL were added and the mixture was kneaded further for 10 min. The resulting paste was extruded and dried at 120°, followed by calcination at 100°/h temperature rise to 500°, 2 h at 500°, 2 h with a temperature rise to 1400°, and 2 h at 1400°. The **support** obtained had

a pore volume of 0.58 mL/g and an organic pore diameter of 1.4  $\mu\text{m}$ . The support was impregnated with an aqueous solution of Ag oxalate (28 weight% Ag-containing) complexed with ethylenediamine and also containing CsOH. The impregnation was performed for 10 min under vacuum; the catalyst was then placed in an air stream at 250-270° for 10 min to reduce the Ag salt. The catalyst contained 21 weight% Ag and 290 weight parts Cs per million weight parts of total catalyst. The catalyst was used to make ethylene oxide with a gas mixture containing C2H4 30, O2 8.5, CO2 7, N2 54.5 mol% and vinyl chloride

5.5 ppm at 15 bar and a space velocity of 3300/h. A cylindrical steel reactor 40-cm long and 5 mm in cross section was used. After 24 h of operation, the reaction temperature of the catalyst was 225°, compared to 236° for the standard S 389 catalyst.

L12 ANSWER 56 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1986:515540 CAPLUS  
 DOCUMENT NUMBER: 105:115540  
 TITLE: Silver catalyst for ethylene oxide production  
 INVENTOR(S): Nojiri, Naohiro; Sakai, Yukio  
 PATENT ASSIGNEE(S): Mitsui Petrochemical Industries, Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 61071838	A2	19860412	JP 1984-191733	19840914
US 4642360	A	19870210	US 1985-782178	19851001
PRIORITY APPLN. INFO.:			JP 1983-63909	A 19830412
			US 1984-592370	A1 19840322
			JP 1984-191733	A 19840914

OTHER SOURCE(S): CASREACT 105:115540

AB A porous refractory support is impregnated with amine chelating agents, salts of Ag, Na, Cs, and Ba and metal halides (excluding iodides) and heated 1-30 min at 150-250° to give catalysts for manufacture of ethylene oxide (I). Thus, heating 248 g AgNO3 and 148 g K2C2O4·H2O in 2 L water at 60°, filtering the precipitate, washing the precipitate, mixing the precipitate with 0.2 L water containing 79.1 g ethylenediamine and 21.7 mL 1,3-propanediamine, 40 mL water containing 0.22 g Ba(NO3)2 and 0.234 g CsCl, and 1 kg Al2O3 (surface area 0.5 m2/g, pore volume 0.4 mL/g, preimpregnated with 26.9 g Na2CO3), evaporating at 100 mmHg, heating at 200° for 10 min in air flowing at 2 m/s, and crushing gave a catalyst (particle size 4-9 mesh) containing 13.5% Ag, 0.4% Na, 100 ppm Ba, 158 ppm Cs, and 42 ppm Cl. A gas mixture containing

30

volume% C2H4, 8 volume% O, 2 ppm CH2:CHCl, and the balance N was passed over 5 mL above-prepared catalyst at 1.8 kg/cm2 g, 215°, and space velocity 4000 h-1 to give I at O conversion 40% and I selectivity 81.6% after 1 wk.

L12 ANSWER 57 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1984:617262 CAPLUS  
 DOCUMENT NUMBER: 101:217262

TITLE: Heterogeneous **catalyst**  
 INVENTOR(S): Moskovits, Martin  
 PATENT ASSIGNEE(S): University of Toronto Innovations Foundation, Can.  
 SOURCE: U.S., 6 pp. Cont.-in-part of U.S. Ser. No. 264,069, abandoned.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4472533	A	19840918	US 1982-450096	19821215
CA 1137962	A1	19821221	CA 1980-352275	19800520
PRIORITY APPLN. INFO.:			CA 1980-352275	A 19800520
			US 1981-264069	A2 19810515

AB **Supported** heterogeneous **metal catalysts** with high activities and selectivities in hydrocarbon conversions are economically prepared by cleaning Al or Al-alloy **supports**, anodizing, rinsing off the acid residues, contacting the **support** to an electrolyte solution of a Ni, Cu, Co, Fe, Mn, Ti, V, Ag, Au, Pt, Sc, HF, Nb, Cr, Mo, Zr, W, and/or Pd, electrolytically depositing the **metal**, and removing excess solution. Thus, Al foil was cleaned by dipping in aqueous Na<sub>2</sub>CO<sub>3</sub> and aqueous HNO<sub>3</sub>, it was anodized in 10% H<sub>3</sub>PO<sub>4</sub>, the anodized Al after rinsing was placed in aqueous Ni sulfate containing boric acid, and electrolytic deposition was carried out to give a Ni **catalyst** which easily hydrogenated propylene to give propane.

L12 ANSWER 58 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1984:429137 CAPLUS  
 DOCUMENT NUMBER: 101:29137  
 TITLE: Regeneration of alumina **support** material from spent silver-alumina **supported catalysts**  
 INVENTOR(S): Mross, Wolf Dieter; Schwarzmann, Matthias; Plueckhan, Juergen; Dehler, Juergen  
 PATENT ASSIGNEE(S): BASF A.-G. , Fed. Rep. Ger.  
 SOURCE: Ger. Offen., 10 pp.  
 CODEN: GWXXBX  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3239886	A1	19840503	DE 1982-3239886	19821028
EP 110088	A1	19840613	EP 1983-110331	19831017
EP 110088	B1	19870616		
R: BE, DE, FR, GB, IT, NL				
US 4530910	A	19850723	US 1983-543822	19831020
JP 59095932	A2	19840602	JP 1983-200113	19831027
PRIORITY APPLN. INFO.:			DE 1982-3239886	A 19821028

AB A method for regenerating the Al<sub>2</sub>O<sub>3</sub> **supports** of spent Ag **catalysts** consists of treating the Al<sub>2</sub>O<sub>3</sub> in an aqueous solution of soluble **salts** or hydroxides of the Group IIA, IIIB, IVB **metals**, Cu, Mn, Zn, Sn, or Pb, drying, and/or heating for ≥10 min at

750-1500°. Thus, a spent Ag-Al<sub>2</sub>O<sub>3</sub> **catalyst** for preparing **ethylene oxide** was treated with 10% HNO<sub>3</sub> to remove the Ag and washed. The Al<sub>2</sub>O<sub>3</sub> was treated with a Ca(OH)<sub>2</sub> solution, dried at 300° for 10 min, and fired to regenerate the Al<sub>2</sub>O<sub>3</sub>.

L12 ANSWER 59 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 9  
 ACCESSION NUMBER: 1983:471286 CAPLUS  
 DOCUMENT NUMBER: 99:71286  
 TITLE: Silver **catalyst** and manufacture of **ethylene oxide**  
 INVENTOR(S): Warner, Glenn Homer; Bhasin, Madan Mohan; Lieberman, Bernhard  
 PATENT ASSIGNEE(S): Union Carbide Corp. , USA  
 SOURCE: Eur. Pat. Appl., 31 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 76504	A1	19830413	EP 1982-109153	19821004
EP 76504	B1	19861210		
R: BE, DE, FR, GB, IT, NL, SE				
US 4455392	A	19840619	US 1981-308653	19811005
CA 1190213	A1	19850709	CA 1982-412136	19820924
ZA 8207071	A	19830727	ZA 1982-7071	19820927
JP 58084041	A2	19830520	JP 1982-169922	19820930
JP 03047896	B4	19910722		
AU 8288986	A1	19830414	AU 1982-88986	19821004
AU 554763	B2	19860904		
ES 516188	A1	19840301	ES 1982-516188	19821004
RO 85592	B3	19850417	RO 1982-108737	19821004
IN 157837	A	19860705	IN 1982-CA1148	19821004
BR 8205833	A	19830906	BR 1982-5833	19821005
DD 203827	A5	19831109	DD 1982-243804	19821005
PRIORITY APPLN. INFO.:			US 1981-308653	A 19811005

AB A **supported** Ag **catalyst** is prepared for vapor-phase oxidation of C<sub>2</sub>H<sub>4</sub> [74-85-1] to **ethylene oxide** [75-21-8]. A porous carrier is impregnated with Ag **salt** which is reduced by heat, impregnated with an **alkali metal salt** promoter, and heated to deposit the alkali metal cation on the Ag and **support**. Thus,  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> was mixed with an aqueous solution of ethylenediamine [107-15-3], oxalic acid [144-62-7], Ag<sub>2</sub>O, and ethanolamine [141-43-5] for 1 h, heated at 500° for 2.5 min, treated with an aqueous solution of CsOH, K<sub>2</sub>CO<sub>3</sub>, and ethanolamine for .apprx:30 min, and calcined to give a **catalyst** containing Ag 13.1, Cs 0.00906, and K 0.00268%, having selectivity 71.8% at 258°.

L12 ANSWER 60 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1983:143983 CAPLUS  
 DOCUMENT NUMBER: 98:143983  
 TITLE: **Supported metal catalysts**  
 INVENTOR(S): Lee, George A.; Isaacs, Stuart N.  
 PATENT ASSIGNEE(S): Dow Chemical Co., USA  
 SOURCE: U.S., 5 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4367167	A	19830104	US 1981-284312	19810717
PRIORITY APPLN. INFO.:			US 1981-284312	19810717

AB A **supported** noble **metal catalyst** for **ethylene oxide** (I) [75-21-8] manufacture by oxidation of C2H4 [74-85-1] was prepared by impregnating a porous inert material with an aqueous solution of soluble **metal salt** (Ag, Au, Pd, or Pt) and heating the impregnated **support** with an aliphatic amine in a water-immiscible organic solvent to reduce the **metal salt**. Thus, 2169.8 g Al2O3 **support** (3/16 in. spheres) was vacuum impregnated with 1N AgNO3 to absorb 0.999 mol. AgNO3, and was reduced by 0.501 mol. methyldiethanolamine (II) [105-59-9] in 250 mL EtOAc [141-78-6] for 35 min at room temperature and by an addnl. 0.503 mol. II in 250 mL EtOAc at 70° for 6.3 h to give a **supported** **catalyst** containing 4.95% Ag. It was prepared from a mixture containing ethylene, 6, O 6, CO2, 7.5, and N 80.5% in a tubular reactor in the presence of the above **catalyst** at an average temperature 234° in 25.83% conversion and 73.4% selectivity for 60 days. Using a similar Al2O3-**supported catalyst** containing 17.8% Ag prepared by a conventional method, the average temperature required to attain this conversion was 250°.

L12 ANSWER 61 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1983:107143 CAPLUS

DOCUMENT NUMBER: 98:107143

TITLE: Process for making a silver-gold alloy **catalyst** for oxidizing ethylene to **ethylene oxide**

INVENTOR(S): Winterton, Richard C.

PATENT ASSIGNEE(S): Dow Chemical Co., USA

SOURCE: U.S., 3 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4366092	A	19821228	US 1981-288969	19810731
PRIORITY APPLN. INFO.:			US 1981-288969	19810731

AB A **supported catalyst** of a gold-silver alloy was prepared, for epoxidn. of H2C:CH2 to **ethylene oxide**, by applying a gold **salt** to a suitable **support**, reducing it to gold **metal**, then applying a silver **salt** and reducing it to silver, thereby forming a gold-silver alloy by diffusion on the **support**. Thus, an aqueous solution of NaAuCl4 was vacuum impregnated on  $\alpha$ -alumina and the impregnated **support** was similarly treated with silver oxalate to give after drying a **catalyst** which contained 7.22% silver and 0.18% gold. The **catalyst** showed 6-10% increase in selectivity over a control in epoxidn. of ethylene.

L12 ANSWER 62 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1981:163366 CAPLUS  
 DOCUMENT NUMBER: 94:163366  
 TITLE: Catalysts for the production of ethylene oxide  
 INVENTOR(S): Wernli, Walter L.; Fry, William E.; Janda, Steve F.  
 PATENT ASSIGNEE(S): Dow Chemical Co., USA  
 SOURCE: U.S., 4 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4248741	A	19810203	US 1979-43414	19790529
CA 1146151	A1	19830510	CA 1981-369607	19810129
PRIORITY APPLN. INFO.:				US 1979-43414
				19790529

AB An improved Ag **catalyst** for use in producing **ethylene oxide** by reacting ethylene with O<sub>2</sub> in the vapor phase at an elevated temperature is manufactured by (a) impregnating a porous Al<sub>2</sub>O<sub>3</sub> **support** by contacting it with an aqueous solution of a Ag **salt** and a Ba **salt** as promoter, while evacuating to insure complete penetration of the porous **support**, (b) drying the impregnated **support** by heating under vacuum, (c) impregnating the dry **support** with a reducing agent by contacting the **support** with a reducing agent while under vacuum to insure substantially complete penetration of the porous **support** and, (d) heating the **support** to reduce the Ag **salt** on the **support** to Ag **metal**. The Ag and Ba **salts** can be AgNO<sub>3</sub> and Ba(NO<sub>3</sub>)<sub>2</sub>. The reducing agent is an organic ester, e.g. diEt or diBu phthalate, diEt, diBu, dioctyl, or dicapryl sebacate, or diBu, dioctyl, or dicapryl azelate. The **catalyst** produced requires less energy to obtain the same conversion and a better yield.

L12 ANSWER 63 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1979:524191 CAPLUS  
 DOCUMENT NUMBER: 91:124191  
 TITLE: Process for preparing a **supported** silver **catalyst** for the vapor phase oxidation of ethylene to produce **ethylene oxide**  
 INVENTOR(S): Mitsuhata, Masashi; Kumazawa, Toshihiko; Kiguchi, Isamu  
 PATENT ASSIGNEE(S): Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan  
 SOURCE: Brit. UK Pat. Appl., 7 pp.  
 CODEN: BAXXDU  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 2002252	A	19790221	GB 1978-28394	19780630
GB 2002252	B2	19820519		
JP 54013485	A2	19790131	JP 1977-77752	19770701
JP 59029293	B4	19840719		
PRIORITY APPLN. INFO.:				JP 1977-77752 A 19770701

AB Durable, highly active and selective **catalysts** for the oxidation of CH<sub>2</sub>:CH<sub>2</sub> [74-85-1] to **ethylene oxide** [75-21-8] were prepared by reducing a Ag complex impregnated onto inorg. carriers, e.g. Al<sub>2</sub>O<sub>3</sub>, in aqueous solution and activating the deposited Ag with **metal salts**, e.g. Sb lactate [58164-88-8] and Tl sulfate. Thus, a solution, prepared by dropwise addition of 75 g HO(CH<sub>2</sub>)<sub>2</sub>NH<sub>2</sub> [141-43-5] to a cooled solution of 75 g AgNO<sub>3</sub> in 220 g H<sub>2</sub>O, was impregnated in 1 L of spherical  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> carrier particles and the mixture heated 3 h at 90° and 2 h at 120° to deposit the Ag. The washed and dried **catalyst** was activated under N by treatment with a solution containing 1 mL 5% aqueous Sb lactate and 10 mL 2% aqueous Tl sulfate in 300 mL H<sub>2</sub>O. The **catalyst** was used to oxidize CH<sub>2</sub>:CH<sub>2</sub> at 211° in a gas-stream comprising CH<sub>2</sub>:CH<sub>2</sub> 20, O<sub>2</sub> 8, and CO<sub>2</sub> 7% and ClCH<sub>2</sub>CH<sub>2</sub>Cl 1 ppm in an inert gas e.g. N. The conversion and selectivity after 240 h reaction were 8.0% and 83.1%, resp.

L12 ANSWER 64 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1979:142647 CAPLUS  
 DOCUMENT NUMBER: 90:142647  
 TITLE: A method for producing a **catalyst**  
 composition having a carbon fiber carrier  
 INVENTOR(S): Asada, Eiichi; Takiguchi, Toshio  
 PATENT ASSIGNEE(S): Shoei Chemical Industry Co., Ltd., Japan  
 SOURCE: Brit., 10 pp.  
 CODEN: BRXXAA  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
GB 1520513	A	19780809	GB 1975-29434	19750722
PRIORITY APPLN. INFO.:			GB 1975-29434	A 19750722

AB Transition **metal** and **metal oxide catalysts** useful in both oxidation and reduction reactions were manufactured by immersing a C fiber carrier in a nonaq. solution of  $\geq$ 1 organometallic compound, drying, and pyrolyzing. Optionally the **metal**- or **metal oxide**-coated carrier can be further treated with an aqueous solution of an inorg. **salt** of the same or different **metal**. Thus, 250 m<sup>2</sup>/g woven C fiber was immersed in 5% Pd naphthenate in CHCl<sub>3</sub>, dried, and heated 1 h at 220°. This treatment was repeated 3 times to give a **catalyst** containing 4.7% Pd. The **catalyst** was used in the reduction of an EtOH solution of PhCHO at 25° in the presence of H at 1 atm to give PhCH<sub>2</sub>OH with 87% conversion.

L12 ANSWER 65 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1976:80379 CAPLUS  
 DOCUMENT NUMBER: 84:80379  
 TITLE: Silver **catalyst** for use in preparing **ethylene oxide**  
 INVENTOR(S): Nielsen, Robert P.; La Rochelle, John H.  
 PATENT ASSIGNEE(S): Shell Internationale Research Maatschappij B. V., Neth.  
 SOURCE: Ger. Offen., 26 pp.  
 CODEN: GWXXBX  
 DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 6

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2521906	A1	19751204	DE 1975-2521906	19750516
DE 2521906	C2	19891019		
CA 1026763	A1	19780221	CA 1975-224632	19750415
BE 828932	A2	19751112	BE 1975-1006652	19750512
NL 7505705	A	19751124	NL 1975-5705	19750515
NL 182939	B	19880118		
NL 182939	C	19880616		
FR 2271869	A1	19751219	FR 1975-15405	19750516
FR 2271869	B1	19800704		
JP 50160187	A2	19751225	JP 1975-57562	19750516
AU 7581240	A1	19761118	AU 1975-81240	19750516
DE 2560684	C2	19891026	DE 1975-2560684	19750516
NL 8800127	A	19880502	NL 1988-127	19880120
PRIORITY APPLN. INFO.:			US 1974-471398	A 19740520
			US 1974-480896	A 19740619
			NL 1975-5705	A3 19750515

AB For a Ag catalyst with the best selectivity for the oxidation of C2H4 to ethylene oxide, the amount of alkali metal cation introduced simultaneously with Ag onto the porous, heat-stable support is related directly to the sp. surface of the support. For example, com.  $\alpha$ -Al2O3 (alundum) was impregnated with an aqueous solution containing Ag2(en)2C2O4 and a controlled amount of

Rb. The excess liquid was removed by heating at 290°, the catalyst was dried, and the Ag salt was reduced to give a catalyst containing 10.4 weight% metallic Ag and 0.0013 weight% Rb. The selectivity of the catalyst for ethylene oxide was 72.5%.

L12 ANSWER 66 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1975:35363 CAPLUS

DOCUMENT NUMBER: 82:35363

TITLE: Noble metal catalysts

INVENTOR(S): Ohara, Takashi; Ichihara, Shoichi; Saito, Koichi; Ono, Tetsuji

PATENT ASSIGNEE(S): Japan Catalytic Chemical Industry Co., Ltd.

SOURCE: Ger. Offen., 36 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2359772	A1	19740606	DE 1973-2359772	19731130
DE 2359772	C3	19790913		
DE 2359772	B2	19790118		
JP 49077895	A2	19740726	JP 1972-119395	19721130
JP 51028278	B4	19760818		
JP 49111886	A2	19741024	JP 1973-23133	19730228
JP 55033381	B4	19800830		
JP 49114588	A2	19741101	JP 1973-25671	19730306

JP 55040291	B4	19801017	JP 1972-119395	A 19721130
PRIORITY APPLN. INFO.:			JP 1973-23133	A 19730228
			JP 1973-25671	A 19730306

AB A noble metal **catalyst** is prepared by application of an aqueous solution of a noble metal **salt** to a difficultly fusible porous inorg. carrier surface in the presence of a nonionic surface active medium consisting of a poly(oxyethylene) derivative with an average mol. weight of at least 500. Thus, 50 ml aqueous solution containing 0.03 g H<sub>2</sub>PtCl<sub>6</sub>.6H<sub>2</sub>O and 0.25 g propylene oxide-**ethylene oxide** block copolymer (mol. weight 8500, containing 83 weight % ethylene) was stirred on a H<sub>2</sub>O bath with 100 ml activated Al<sub>2</sub>O<sub>3</sub> in 5 + 3 mm cylinders with 110 m<sup>2</sup>/g surface until the solution was concentrated and evaporated to dryness.

The carrier **catalyst** was dried 3 hr at 100° and calcined in a H atmospheric 1 hr at 500°.

L12 ANSWER 67 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1974:27639 CAPLUS  
 DOCUMENT NUMBER: 80:27639  
 TITLE: Alkali metal-promoted silver catalysts for the oxidation of ethylene to ethylene oxide  
 INVENTOR(S): Nielsen, Robert P.; La Rochelle, John H.  
 PATENT ASSIGNEE(S): Shell Internationale Research Maatschappij N. V.  
 SOURCE: Ger. Offen., 43 pp.  
 CODEN: GWXXBX  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 6  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2300512	A1	19730726	DE 1973-2300512	19730105
DE 2300512	C2	19860130		
BE 793658	A1	19730704	BE 1973-126122	19730104
NL 7300162	A	19730710	NL 1973-162	19730105
NL 177662	B	19850603		
NL 177662	C	19880816		
FR 2167728	A1	19730824	FR 1973-329	19730105
JP 49030286	A2	19740318	JP 1973-97	19730105
JP 57048554	B4	19821016		
AU 7350809	A1	19740711	AU 1973-50809	19730105
IT 978032	A	19740920	IT 1973-19060	19730105
GB 1413251	A	19751112	GB 1973-689	19730105
SU 509206	D	19760330	SU 1973-1958292	19730105
ES 410401	A1	19760401	ES 1973-410401	19730105
PL 89083	P	19761030	PL 1973-160171	19730105
RO 61470	L	19770215	RO 1973-73406	19730105
SE 392044	B	19770314	SE 1973-157	19730105
CS 191210	P	19790629	CS 1973-124	19730105
DD 104206	C	19740312	DD 1973-168136	19730108
DD 112438	C	19750405	DD 1973-178738	19730108
ES 437964	A1	19770401	ES 1975-437964	19750527
SE 7509856	A	19750904	SE 1975-9856	19750904
SE 423543	B	19820510		

SE 423543	C	19820819		
CS 191249	P	19790629	CS 1977-6150	19770922
CS 191250	P	19790629	CS 1977-6151	19770922
PRIORITY APPLN. INFO.:			US 1972-216188	A 19720107
			CS 1973-124	A3 19730105

AB The selectivity of 7.8% silver [7440-22-4]-aluminum oxide catalysts for the oxidation of ethylene to ethylene oxide [75-21-8] was enhanced by addition of 0.00035-0.0030 g-equivalent potassium [7440-09-7], rubidium [7440-17-7], or cesium [7440-46-2] ions/kg catalyst. Thus,  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> of surface area 0.24 m<sup>2</sup>/g (porosity 48-9 volume% and average pore diameter 4.4  $\mu$ ) was impregnated with an aqueous solution

containing [Ag<sub>2</sub>(en)<sub>2</sub>]Cl<sub>2</sub>, ethanolamine, and KNO<sub>3</sub> (22% Ag and 0.019% K) and dried 3 hr at 290.deg. with reduction of the Ag salt to give a Al<sub>2</sub>O<sub>3</sub>-supported catalyst containing 7.8% Ag and 0.0015 g-equiv K/kg catalyst. An ethylene-O mixture (30 mole% ethylene, ethylene-O ratio 3.75:1) was passed over this catalyst in the presence of Cl-containing moderator (0.001-0.0015% Cl equivs.) at 253.deg., 15 atm, and space velocity 3300 hr<sup>-1</sup> to give ethylene oxide at 52% ethylene conversion and 78% selectivity vs. 69% selectivity for a K-free catalyst.

L12 ANSWER 68 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1973:539421 CAPLUS

DOCUMENT NUMBER: 79:139421

TITLE: Heat-resistant inorganic foams

INVENTOR(S): Winter, Gerhard; Mansmann, Manfred

PATENT ASSIGNEE(S): Farbenfabriken Bayer A.-G.

SOURCE: Ger. Offen., 19 pp.

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2118471	A1	19730607	DE 1971-2118471	19710416
BE 782048	A1	19721013	BE 1972-116268	19720413
IT 952625	A	19730730	IT 1972-49579	19720413
NL 7205077	A	19721018	NL 1972-5077	19720414
FR 2133769	A1	19721201	FR 1972-13260	19720414

PRIORITY APPLN. INFO.: DE 1971-2118471 A 19710416

AB Heat-resistant shaped material consisting of SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Cr<sub>2</sub>O<sub>3</sub>, Al<sub>2</sub>O<sub>3</sub> or TiO<sub>2</sub> foams, useful as heat- and sound-insulating, filter, catalyst, or catalyst supported material, was manufactured by evaporation of aqueous solns. or suspensions containing poly(ethylene oxide), polystyrene, or polyisobutene of d. p. 85,500-136,400 in addition to SiO<sub>2</sub> or corresponding metal salts with optional introduction of N, NH<sub>3</sub>, or other gases and optional heating at 800-1500°. Thus, NH<sub>3</sub> was passed into a mixture containing 200 ml alkali-stabilized silica sol (30% SiO<sub>2</sub> and 0.16% Na), 200 ml water, and 65 g aqueous 2.1% poly(ethylene oxide) of d.p. 136,400 until the pH was 10.5. This solution was dried as a 0.5-cm thick layer at 100° to give a 4-cm thick foam, useful as heat-and sound-insulating material. Further heating at 1300° for 3 hr gave an acid- and alkali-resistant foam of porosity 50%, apparent d. 1.1, and increased mech. strength.

L12 ANSWER 69 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1973:22570 CAPLUS  
 DOCUMENT NUMBER: 78:22570  
 TITLE: Epoxy photopolymer compositions for printing plates  
 PATENT ASSIGNEE(S): American Can Co.  
 SOURCE: Fr., 26 pp.  
 CODEN: FRXXAK  
 DOCUMENT TYPE: Patent  
 LANGUAGE: French  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2098757	-----	19720414	FR 1970-27594	19700727

AB The title compns. contain an **epoxide** and a light-sensitive aryldiazonium **salt** ( $RC_6H_4N_2^{+n} Zn^-$  (I; R =  $NO_2$ , halo, N-morpholino, alkyl, aryl, alkoxy,  $NH_2$ , arylamino, alkylamino, arylmercapto; M = 1, 2; and  $Zm^-$  =  $SnCl_6^{2-}$ ,  $FeCl_4^-$ ,  $PF_6^-$ ,  $AsF_6^-$ ,  $SbF_6^-$ ,  $SbCl_6^-$ ,  $BiCl_5^{2-}$ ) which on photodecompn. yields a Lewis acid as the polymerization

**catalyst**. These compns. are particularly useful for the preparation of printing plates because of their high adherence to the **support** and excellent abrasion and solvent resistance. Thus, a steel, acid-engraving plate was coated with a mixture of 97 g of a PhMe solution of 60% ECN 1299 (epoxy resin), 95 ml MeCN, and 2.91 g I (R =  $p-Cl$ , m = 1, and Z =  $PF_6^-$ ). The plate was exposed for 10 min to a C arc through a photog. negative, washed with  $Me_2CO$  to remove unhardened coating, and heated for 15 min at  $180^\circ$  to complete the hardening. The plate was then treated with  $HNO_3$ , removing the **metal** in the unexposed areas only.

L12 ANSWER 70 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1968:78111 CAPLUS  
 DOCUMENT NUMBER: 68:78111  
 TITLE: Ethylene oxidation **catalyst**  
 PATENT ASSIGNEE(S): Engelhard Industries, Inc.  
 SOURCE: Brit., 5 pp.  
 CODEN: BRXXAA  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 1103678	-----	19680221	-----	-----
US 3423328	-----	19690000	US	-----

PRIORITY APPLN. INFO.: US 19651122  
 AB The title **catalyst** is prepared by precipitating  $Ag_2CO_3$  from an aqueous solution of a Ag **salt** with an alkali **metal** carbonate at pH 7.5-10, washing the  $Ag_2CO_3$  until free from alkali **metal** ions, blending an aqueous slurry of the compound with enough  $Ba(OH)_2$  to give 1-25 parts Ba per part Ag, impregnating an inert **support** with this solution, and activating the **catalyst** in a stream of H-containing gas at  $100-400^\circ$ . Thus, a **catalyst** was prepared by the method described above, using a  $Ba(OH)_2$ - $Ag_2CO_3$  weight ratio 0.14:2.84. Alundum spheres were used as a **support**, and the **catalyst** was activated with N containing 7% H at  $250-300^\circ$  for 3 hrs. A gas mixture

containing C<sub>2</sub>H<sub>4</sub> 5.0, O 6.0, CO<sub>2</sub> 6.0, and C<sub>2</sub>H<sub>6</sub> 0.5%, with the balance being N containing 2-5 ppm. dichloroethane (I), was fed to a reactor containing 47 ml. **catalyst** at atmospheric pressure and elevated temperature. The volume hourly space velocity was 520, and the contact time with the **catalyst** was 3.0 sec. At various intervals on stream, the effluent was analyzed, and the results are shown in the table, the selectivity being to (and the yield being of) **ethylene oxide**. [TABLE OMITTED] A **catalyst** can also be prepared by adding 1-5 weight % gelatin to the impregnating slurry, and by treating the **support** with HNO<sub>3</sub> and sintering before impregnation. These **catalysts** have excellent resistance to dusting, high selectivity, and good uniformity, and are also highly active. They can be used in processes operating at elevated pressures.

L12 ANSWER 71 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1968:479082 CAPLUS

DOCUMENT NUMBER: 69:79082

TITLE: **Supported** aluminum **catalysts** for oxidation of exhaust gases of motor vehicles

INVENTOR(S): Talsma, Herbert

PATENT ASSIGNEE(S): du Pont de Nemours, E. I., and Co.

SOURCE: Ger., 8 pp.  
CODEN: GWXXAW

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 1272896	-----	19680718	DE	19650528

AB The title **catalysts** (I) are prepared by heating at a temperature between 400 and 1500° Al particles of special dimensions in the presence of O, and of certain oxides (II) as a flux in amts. of 5-0.2% by weight of the Al, until at least 10% of the Al has been oxidized, at least 1% of the Al is still present in an oxidation state with a valency below 3, and the product contains at least 30% by weight of Al<sub>2</sub>O<sub>3</sub>. On this **support**, the catalytically active component (III) is precipitated. The Al particles may have 1 dimension of at least 0.18 mm., the other of at least 0.013 mm., and the 3rd one between 0.013 and 5 mm., or may be honeycomb-formed Al foil. II comprises oxides of the alkaline earth **metals**, V, Cr, Cu, Zn, Mo, Ag, Sb, W, Bi, alkaline hydroxides, and compds., from which these oxides can be formed, such as heat-unstable organic and inorg. **salts** of the **metals** mentioned. Besides II, ≤48% heat-resistant fillers may be used. It is also possible that III serves as a filler. III comprises mixed oxides of V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Mo, Ag, Sn, Ba, Ce, W, Pb, and (or) Bi, and metallic Ru, Rh, Pd, Os, Ir, and (or) Pt. I maintain their activity at high temps. (≤1000°), resist vibration, and can be **supported** on steel. Thus, by pressing a mixture of Al fibers and Na silicate on the inside of a steel tube, and burning afterwards, a uniform Al<sub>2</sub>O<sub>3</sub> inner coating was obtained. The catalytic compds. may be added before or after burning. I may also be used as **catalysts** for oxidation and reduction reactions, e.g., reduction of NO, as well as synthesis of H<sub>2</sub>CO from CH<sub>4</sub> or MeOH SO<sub>3</sub> from SO<sub>2</sub>, **ethylene oxide** from C<sub>2</sub>H<sub>4</sub>, phthalic anhydride from naphthalene, and synthesis gas (mixts. of H<sub>2</sub>, CO, and CO<sub>2</sub>) from hydrocarbons.

L12 ANSWER 72 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1966:103865 CAPLUS  
 DOCUMENT NUMBER: 64:103865  
 ORIGINAL REFERENCE NO.: 64:19489a-d  
 TITLE: Hydrogenolysis of aryl carbinols  
 PATENT ASSIGNEE(S): Halcon International, Inc.  
 SOURCE: 14 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
NL 6508427		19660110	NL	
PRIORITY APPLN. INFO.:			US	19640707

AB Alkenes were treated at 60-120° under atmospheric or to a 1000 psig. pressure with an alkyl aromatic hydroperoxide yielding **epoxides** and an alkyl aromatic alc. which was hydrogenated giving the corresponding alkyl aromatic hydrocarbon. This hydrocarbon was oxidized with O to obtain the corresponding hydroperoxide which was recycled. The hydrogenation was operated in the gas phase at 150-500° with H in the presence of a **catalyst** containing one or more hydrogenating metals (I) such as Ni, Zn, Cu, Co, Ag or Sn and as modifying agent an alkali, alkaline earth, Cr, or Fe. This **catalyst** was obtained by contacting a **support** (granule size 4-40 mesh) with an aqueous mixture of a I-salt and of a precursor of said modifying agent, drying 1-6 hrs. at 100-200°, heating 1-6 hrs. at 300-500° and reducing 10-20 hrs. at 300-500° in a H atmospheric. Thus, propene was epoxidized with cumyl hydroperoxide (100% conversion) yielding cumyl alc. (II) as by-product and propene oxide which was separated by distillation II treated with H in the gas phase (ratio II:H 4:1) at 350° under 0 and 50 psig. (space velocity 4) yielded, resp., 99.0 and 99.5% cumene (100% conversion). This hydrogenation was effected in the presence of a **catalyst** containing activated Al2O3 100, Cr2O3 15, NiO 15, and KOH 10 parts. This **catalyst** was obtained by milling Al2O3 (alcon F-10) to a granule size of 15-20 mesh, impregnating with aqueous KOH, drying, treating with an aqueous mixture of CrO3 and Ni(NO3)2, drying 5 hrs. at 15°, heating 5 hrs. at 450° and reducing into a tubular reactor during 16 hrs. at 450° in a H atmospheric

L12 ANSWER 73 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1966:19151 CAPLUS  
 DOCUMENT NUMBER: 64:19151  
 ORIGINAL REFERENCE NO.: 64:3480a-c  
 TITLE: **Supported catalysts**  
 INVENTOR(S): Friedrichsen, Wilhelm  
 PATENT ASSIGNEE(S): Badische Anilin- & Soda-Fabrik A.-G.  
 SOURCE: 2 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
DE 1200263		19650814	DE	19630814
BE 651806			BE	
FR 1404244			FR	

AB Very active **catalysts** can be prepared by applying to an inert carrier a solution of the active catalytic constituent in a fused NH<sub>4</sub> **salt** of an aliphatic carboxylic acid and (or) in fused NH<sub>4</sub>SCN, fixing the active constituent by heating, and burning off the organic material. The active catalytic material may be any of a large variety of **metals**, depending on the intended use. **Catalysts** for oxidation of hydrocarbons, hydrogenation of olefins, dehydrogenation of alcs., and for dehydration, amination, dealkylation, and reforming processes can be prepared in this way. Thus, 400 parts NH<sub>4</sub>SCN was melted at 130° treated with 200 parts vanadyl oxalate, and then at 55° with 50 parts Me<sub>2</sub>CO. The dilute melt (500 parts) was saturated with 670 parts TiO<sub>2</sub> (0.2-0.5 mm. spheres), heated to 200°, placed in an eddy oven into which air from beneath was passed, and heated 2 hrs. at 400° to give TiO<sub>2</sub> **catalyst** containing 11.5% V2O<sub>5</sub>. o-Xylene and air in the presence of this **catalyst** gave phthalic anhydride and a small amount maleic anhydride. A **catalyst** prepared from NH<sub>4</sub>OAc, Ni(OAc)<sub>2</sub>, and clay pieces was used for the reduction of olefins and ketones while one prepared from AgNO<sub>3</sub>, NH<sub>4</sub>SCN, and aluminum silicate gave a **catalyst** used for the preparation of **ethylene oxide** from ethylene.

L12 ANSWER 74 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1965:460858 CAPLUS  
 DOCUMENT NUMBER: 63:60858  
 ORIGINAL REFERENCE NO.: 63:11068b-d  
 TITLE: Porous metallic forms  
 INVENTOR(S): Brans, Ludwig; Schnuchel, Guenther  
 PATENT ASSIGNEE(S): Erdolchemie G.m.b.H.  
 SOURCE: 10 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
BE 648584	-----	19641130	BE	-----
FR 1396858	-----		FR	
PRIORITY APPLN. INFO.:			DE	19630820

AB Porous substrates for **catalyst supports** may be relatively costly, or for filter diaphragms may be too flux resistant. The invention specifies the use of metallic **salts** easily decomposable to the **metal** by heat, and if necessary, adding an accessory reductant. For solid **catalysts**, a refractory nonreducible oxide filler is thereby coated and cemented together by the reduced **metal**. For filter diaphragms, e.g., of Ag, Cu, Pt, Ni, Cd, Pb, Co, Mn, or Cr, the filler may be cellulose, wood flour, or other totally combustible material, usually of particle size 10-2,000  $\mu$  further reinforcement may be obtained by asbestos, glass cloth, or **metal** fabric in amts.  $\leq$ 10 weight %. Similar coatings may be made inside a pipe for continuous catalysis, or porous masses may be prepared e.g., by rolling. For example, a mold is filled with cotton wool under a pressure of 2 kg./cm.<sup>2</sup>, injected with molten Ag lactate, and then ignited at 300°. The porous Ag plate, 500 + 300 + 10 mm., may then be used in the synthetic oxidation of C<sub>2</sub>H<sub>4</sub> to C<sub>2</sub>H<sub>4</sub>O. In another example, 60 g. Al powder is homogenized at 100° with 30 g. Ag lactate, and homogenized again after further heating at 180° ignition at 300° for 3 hrs. is then carried out. The 20% Ag agglomerate is then broken up for use as a solid **catalyst**.

L12 ANSWER 75 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1955:28303 CAPLUS  
 DOCUMENT NUMBER: 49:28303  
 ORIGINAL REFERENCE NO.: 49:5511h-i,5512a-c  
 TITLE: Silver-surface **catalysts** for olefin oxidation  
 INVENTOR(S): Sacken, Donald K.  
 PATENT ASSIGNEE(S): Jefferson Chemical Co., Inc.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2671764	-----	19540309	-----	-----
		US		

AB Ag-surface **catalysts** for the oxidation of olefins to olefin oxides are produced by incorporating in them a sulfate of Na, K, Li, Rb, or Cs. The concentration of sulfate is 15-150% (based on the weight of the Ag<sub>2</sub>O)

and 0.5-10% (based on the weight of the **support**). The Ag<sub>2</sub>O is prepared by treating AgNO<sub>3</sub> or other soluble Ag **salt** with NaOH, KOH, Ba(OH)<sub>2</sub>, or other hydroxide which ppts. Ag<sub>2</sub>O. The alkali sulfate promoter may be incorporated in the **catalyst**, e.g. by washing the carrier or **salt** with an aqueous solution of the promoter, drying the washed **support** at 110-80°, and then incorporating the Ag<sub>2</sub>O paste by mech. mixing. The Ag<sub>2</sub>O is converted to Ag by passing a stream of an olefin with air at 250-90° over it. The activities of the **catalysts** are determined by measuring the percentage of C<sub>2</sub>H<sub>4</sub> in a mixture of 1 volume C<sub>2</sub>H<sub>4</sub> and 10 vols. after oxidation air, to C<sub>2</sub>H<sub>4</sub>O at about 280°, space velocity about 400, and contact time 2.4 sec. over a fixed bed of the **catalyst**. Cf. U.S. 2,671,766. Ag<sub>2</sub>O and a Ag **salt** relatively more soluble than Ag<sub>2</sub>O are copptd. at 0-95° from a solution of a water-soluble Ag **salt** by addition of an alkali, alkaline-earth **metal** hydroxide or alkaline-earth **metal** **salt**. The 2nd Ag **salt** is then removed from the Ag<sub>2</sub>O and the residual Ag<sub>2</sub>O is deposited on a **support**. The precipitate consists of 1-10 parts Ag<sub>2</sub>O per part Ag **salt**. E.g., AgNO<sub>3</sub> is treated with NaOH and Na<sub>2</sub>SO<sub>4</sub> to precipitate Ag<sub>2</sub>O and Ag<sub>2</sub>SO<sub>4</sub>, the more soluble Ag<sub>2</sub>SO<sub>4</sub> separated

from the Ag<sub>2</sub>O by washing with water, and the Ag<sub>2</sub>O deposited on a carrier such as SiC or fused or crystalline Al<sub>2</sub>O<sub>3</sub>. NaOH (10-50% excess) is added, and the ppts. are digested 5-30 min. at 5-95°, decanted, and washed with water. Deposition of **catalyst** slurry on the carrier is accomplished by agitating the 2 materials together. If desired, before the **catalyst** is changed to the converter, it is reduced with NH<sub>3</sub> or H. E.g., a solution of 15.8 g. AgNO<sub>3</sub> in 150 ml. water is precipitated with

a solution of 3 g. NaOH and 1.32 g. Na<sub>2</sub>SO<sub>4</sub> in 50 ml. water, at 25-30°.

L12 ANSWER 76 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1955:60661 CAPLUS  
 DOCUMENT NUMBER: 49:60661  
 ORIGINAL REFERENCE NO.: 49:11688d-f  
 TITLE: Catalyst for olefin oxide reaction  
 PATENT ASSIGNEE(S): Chempatents, Inc.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable

FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
GB 711601		19540707	GB	
DE 1068235			DE	

AB The **catalyst** is prepared from a mixture of Ag<sub>2</sub>O and an organic salt of an alkali metal or an alkaline-earth metal. Thus, Ag<sub>2</sub>O is precipitated: a 20-40% by weight aqueous solution of AgNO<sub>3</sub> and a 5-10% aqueous solution of NaOH mixed, allowed to settle, thoroughly washed, suspended in an aqueous solution of a salt such as Ba lactate, Ba acetate, Ca acetate, Sr salicylate, or Li citrate (concentration of the organic salt 1-25% of the weight of Ag<sub>2</sub>O precipitate), support particles of Si carbide, Be porcelain, mullite Al oxide, or mixts. of these materials are added to the Ag<sub>2</sub>O suspension, the mixture is evaporated until the support particles are thoroughly coated with the **catalyst**, and the **catalyst** particles are dried at slightly above 100° and stabilized by roasting 0.5-24 hrs. at 300-500° in an inert atmospheric. This **catalyst** gives a higher yield and has a greater selectivity for producing ethylene oxide.

L12 ANSWER 77 OF 77 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1955:73372 CAPLUS  
 DOCUMENT NUMBER: 49:73372  
 ORIGINAL REFERENCE NO.: 49:13881c-i,13882a-i,13883a-c  
 TITLE: Oxidation products of diisobutylene. II. Isomerization of 1,2-epoxy-2,4,4-trimethylpentane, and some products derived from 2,4,4-trimethylpentanal  
 AUTHOR(S): Gasson, E. J.; Graham, A. R.; Millidge, A. F.; Robson, I. K. M.; Webster, W.; Wild, A. M.; Young, D. P.  
 CORPORATE SOURCE: Distillers Co. Ltd., Epsom, UK  
 SOURCE: Journal of the Chemical Society, Abstracts (1954)  
 2170-9  
 CODEN: JCSAAZ; ISSN: 0590-9791

DOCUMENT TYPE: Journal  
 LANGUAGE: Unavailable

AB Distilled VII (1 volume) in 3 vols. C<sub>6</sub>H<sub>6</sub> or cyclohexane added below 30° to 2 vols. each of concentrated H<sub>2</sub>SO<sub>4</sub> and H<sub>2</sub>O under N or CO<sub>2</sub>, agitation continued 5 min., and the upper layer separated and washed with a small amount of aqueous NaHCO<sub>3</sub> gave 77-92% (by anal.) Me<sub>3</sub>CCH<sub>2</sub>CHMeCHO (X); distillation yielded X in 90-2% purity, b<sub>100</sub> 78°; 90% H<sub>3</sub>PO<sub>4</sub> under the same conditions gave 92% X. The isomerization was also carried out continuously in an all-glass apparatus by countercurrent feeding of VII and dilute H<sub>2</sub>SO<sub>4</sub> and gave 82% X. By either method aqueous HCl or p-MeC<sub>6</sub>H<sub>4</sub>SO<sub>3</sub>H gave inferior results. Distilled VII alone or in solution dripped slowly on 2% by volume of solid **catalyst**, and the whole stirred under N 0.25 h. at room temperature and 0.5 h. at 70°, neutralized, and distilled gave the following yields of X (**catalyst**, % concentration of VII in solvent, % yield): ZnCl<sub>2</sub>, no solvent, 41; ZnCl<sub>2</sub> 25% in cyclohexane (XI), 73; ZnCl<sub>2</sub>, 12.5% in XI 84; ZnCl<sub>2</sub>, 25% in C<sub>6</sub>H<sub>6</sub> (XII), 84; ZnCl<sub>2</sub>, 25% in IV, 88; FeCl<sub>3</sub>, no solvent, 25; FeCl<sub>3</sub>, 25% in XI, 91; FeCl<sub>3</sub>, 12.5% in XI, 87.5; FeCl<sub>3</sub>, 25% in XII, 87.5; FeCl<sub>3</sub>, 25% in IV, 48; MgCl<sub>2</sub>, 25% in XI, 5.5; CoCl<sub>3</sub>, 25% in XI, 5; SnBr<sub>4</sub>, 25% in XI, 78; SnCl<sub>2</sub>, 25% in IV, 75; BF<sub>3</sub>.Et<sub>2</sub>O, 25% in IV, 62; TiCl<sub>4</sub>, 25% in XI, 66; NaH<sub>2</sub>PO<sub>4</sub>, 25% in XI, 6; Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>, 25% in XI, 8; potash alum, 25% in XI, 4; Zeocarb H.I., 25% in XI, 8; zeocarb H.I., 25% in XII, 22; supercel, 25% in XI, 4; fullers earth, 25% in XI, 58. No isomerization of

VII in XI occurred with  $\text{NiCl}_2$ ,  $\text{HgCl}_2$ , or alumina (XIII). Vapor-phase isomerizations were studied in a Pyrex U-tube immersed in a fusible-metal bath. One arm, 15 mm. in diameter, was filled with granules of XIII (8-10 mesh) supported on a sintered glass plate (catalyst volume 12-18 mL.), and VII was introduced into the other arm, which acted as a vaporizer and preheater. Maximum yields of 83-7% X were obtained at 280-340°; the yield was unchanged by contact time varying from 2 to 100 s. The catalyst life was >100 h. although it became covered with a thin film of C. Granulated acid-washed fullers earth (XIV), after an initial period of lower yields, gave a 98% yield; XIV was a less vigorous and more easily controlled catalyst. Pumice or kieselguhr impregnated with  $\text{H}_3\text{PO}_4$  gave up to 90% XI with a diluent for the VII and high acid concns. and high feed rates avoided. Oxidized Al turnings gave a 76% yield. Of the vapor-phase catalysts,  $\text{SO}_3$  gave a 74% yield with considerable charring,  $\text{Bu}_2\text{HPO}_4$  10-12%; and  $\text{SO}_2$  3-4% at 250°. VII (128 g.) added dropwise with stirring below 60° to 200 g.  $\text{Ac}_2\text{O}$  and 2 g.  $\text{H}_2\text{SO}_4$ , the whole kept 1 h., neutralized with an excess of anhydrous  $\text{NaOAc}$ , filtered, the filtrate concentrated in vacuo, the residue partitioned between  $\text{Et}_2\text{O}$  and  $\text{H}_2\text{O}$ , and the  $\text{Et}_2\text{O}$  layer separated, washed with aqueous  $\text{NaOH}$ , concentrated, and distilled gave 22.1 g., b12 76° [shown to be impure  $\text{Me}_3\text{CCH}_2\text{C}(:\text{CH}_2)\text{CH}_2\text{OAc}$ , hydrolysis giving VIIIB, b20 75-80°, n20D 1.4440 (3,5-dinitrobenzoate, m. 47-8°)], and 82.9 g., b12 114° [shown to consist of 15%  $\text{Me}_3\text{CCH}_2\text{CMe}(\text{OAc})\text{CH}_2\text{OAc}$  and 85%  $\text{Me}_3\text{CCH}_2\text{CHMeCH}(\text{OAc})_2$  (XV)].  $\text{Me}_3\text{CCH}_2\text{CHMeCHO}$  (XVI) (50 g.) added slowly to 100 mL.  $\text{Ac}_2\text{O}$  and 2 g.  $\text{H}_2\text{SO}_4$  gave 37.8 g. XV, b10 112-14°, n20D 1.4274. VII (100 g.) and 500 mL.  $\text{EtOH}$  heated 5 h. at 220° and distilled gave much unchanged VII and then 15.7 g. VIIIB, b12 71-4°, n20D 1.4409 [p-nitrobenzoate, m. 30-5° (from alc. between 20° and -50°); acetate, b16 73°, n20D 1.4280]; hydrogenation of VIIIB over Adam's catalyst gave  $\text{Me}_3\text{CCH}_2\text{CHMeCH}_2\text{OH}$  (XVII). VII heated alone from 1.75 to 24 h. at 200-75° gave complex mixts. of products, the only compds. identified being VIIIB and XVII. VII (10 g.) in 20 mL. medicinal paraffin heated 18 h. at 275° also gave a complex mixture in which only XVII could be identified.  $\text{Me}_3\text{CCH}_2\text{CHMeCHO}$  (23.5 g.) and 63 mL. 3N  $\text{Al}(\text{OCHMe}_2)_3$  in iso-PrOH heated under a fractionating column until the calculated amount of  $\text{Me}_2\text{CO}$  was collected, and the mixture distilled gave 13.0 g.

Me3CCH<sub>2</sub>CHMeCH<sub>2</sub>OH, b20 75-7°, n20D 1.4501; 3,5-dinitrobenzoate, flat needles, m. 80°. Similarly, 22.3 g.  $\text{CH}_2\text{C}(\text{CMe}_3)\text{CHO}$  and 60 mL. 3N  $\text{Al}(\text{OCHMe}_2)_3$  in iso-PrOH gave 7 g. VIIIB, b12 72-3.5°, n20D 1.4441; 3,5-dinitrobenzoate, m. 56°; 1-naphthylurethane, m. 83-5° (from petr. ether). Shaking IX 1 h. with 10% by weight aqueous  $\text{H}_2\text{SO}_4$  gave principally VIIIA (3,5-dinitrobenzoate, m. 120-1°), and small amts. of  $\text{Me}_3\text{CCH}(\text{OH})\text{CMe}_2\text{OH}$ , m. 62-3°, and IIA (2,4-dinitrophenylhydrazone, orange-red, m. 154-6°). In the vapor phase at 279-90° over XIII, IX gave a complex mixture of ketones in which  $\text{Me}_3\text{CCOCHMe}_2$  was identified, along with possibly  $\text{Me}_3\text{CCMe}_2\text{CO}_2\text{H}$ , m. 195-7°, and  $\text{Me}_3\text{CCMe}_2\text{CHO}$ , camphorlike solid, b12 46-52°, m. 109-19° (2,4-dinitrophenylhydrazone, yellow, m. 157-9°). IIA, synthesized by the Favorskii method (Favorskii and Fritzmann, J. Russ. Phys. Chemical Society 44, 1351(1912)), gave a 2,4-dinitrophenylhydrazone, orange-red leaflets, m. 161-2°. Crude XVI vaporized in a Cu coil, mixed with H (6-7 mol H/mol XVI), and passed over 290 g. Cu-kieselguhr pellets in a Pyrex tube 2.5 cm. in diameter at 200 ± 10° and a contact time of about 20 s. gave 60% XVII. The vapor pressure of XVII and the corresponding temperature were as follows: 20, 79.7°; 40, 93.1°; 60, 101.6°; 200, 131.2°; 400, 151.2°; and 760,

172.4°.  $(\text{CH}_2)_4(\text{CO}_2\text{H})_2$  (36.5 g.), 100 g. XVII, 19 g. XII, and 0.1 mL. concentrated  $\text{H}_2\text{SO}_4$  refluxed 6 h. with the  $\text{H}_2\text{O}$  removed continuously, the XII distilled, and the residue washed and distilled gave the adipate, b1 178°, n20D 1.4452. The following esters of XVII were similarly prepared: 2,4,4-trimethylvalerate, b1 92-3°, n20D 1.4307; fumarate, b2 168-72°, n20D 1.4540; maleate, b3 167°, n20D 1.4518; pimelate, b1.5 192°, n20D 1.4461; oleate, b1 208°, n20D 1.4547; and the 3-cyclohexene-1-carboxylate, b2 112°, n20D 1.4600. XVII (109 g.) added slowly to 38 g.  $\text{POCl}_3$  in 107 g. XII, and the whole warmed until  $\text{HCl}$  evolution ceased, washed, and distilled gave the orthophosphate, b2 184°, 20D 1.4395. XVI (410 g.) containing 1 g. Mn naphthenate stirred rapidly while O was passed through until absorption of the O became very slow and the mixture distilled gave  $\text{Me}_3\text{CCH}_2\text{CHMeCO}_2\text{H}$  (XVIII), b2 90-4°, and a higher-boiling fraction, b1 110-20°, which may be the anhydride of XVIII. The following summarize the runs [temperature (°C.), time (hrs.), % yield of XVIII]: 0, 4.5, 73.5; 10-20, 12.5, 60; and 50, 8, 42. A V naphthenate **catalyst** gave more irregular results and, in 1 case, an explosion. At 0 to 10° was presumably formed an unstable peroxide which decomposed to give mainly XVIII; at 30-50°, was formed a more stable peroxide (this was demonstrated by peroxide titration) which was not decomposed to XVIII. XVIII (100 g.) and 70 mL.  $\text{SOCl}_2$  warmed until  $\text{HCl}$  evolution ceased and then fractionated gave 107 g. acid chloride (XVIIIA), b750 164-5°. XVI (200 g.) and 500 mL. 10N  $\text{MeOH-NH}_3$  hydrogenated 2 h. at 30 atmospheric and 120° over Raney Ni gave 173.2 g.  $\text{Me}_3\text{CCH}_2\text{CHMeCH}_2\text{NH}_2$  (XIX), b78 79-84°; picrate, yellow plates, m. 190°; sulfate, colorless plates, m. 268-72° (from hot  $\text{H}_2\text{O}$  on dilution with  $\text{EtOH}$ ). XVI in 4 vols. 4N  $\text{MeOH-NH}_3$  and a 10-fold excess of H passed over 28% Ni on kieselguhr at 200°, contact time 20 s., gave 45% XIX and 10%  $(\text{Me}_3\text{CCH}_2\text{CHMeCH}_2)_2\text{NH}$  (XX). The oily oxime from 10 g. XVI, 10 g.  $\text{H}_2\text{NOH.HCl}$ , 15 g.  $\text{KOAc}$ , 100 mL.  $\text{MeOH}$ , and 50 mL.  $\text{H}_2\text{O}$  dissolved in 500 mL. absolute  $\text{EtOH}$ , added in 1 portion to 50 g. Na cut into small pieces, the reaction allowed to proceed vigorously with occasional cooling, the mixture then heated to dissolve any unreacted Na, and the whole diluted with  $\text{H}_2\text{O}$  gave 22% XIX, b12 45-7°. XIX (197 g., 88% pure), 105 g. XVI (85% pure), 150 mL.  $\text{MeOH}$ , and Raney Ni hydrogenated at 50 atmospheric and 110-25° gave 154 g. XX, b11 121-4°, n20D 1.440;  $\text{HCl}$  salt, m. 134-7° (from  $\text{EtOAc}$ ). To 50 g. XX was added 50 mL. 98%  $\text{HCO}_2\text{H}$ , with the temperature kept below 40°, 50 mL. 40% aqueous  $\text{HCHO}$  then added, the whole refluxed 2 h., poured into  $\text{H}_2\text{O}$ , made basic with  $\text{NaOH}$ , the oil which separated extracted into  $\text{Et}_2\text{O}$ , and the extract concentrated and distilled gave 34.8 g.  $(\text{Me}_3\text{CCH}_2\text{CHMeCH}_2)_2\text{NMe}$  (XXI), b13 127-8°, n20D 1.4377 [picrate, yellow plates, m. 128-9°;  $\text{HCl}$  salt, m. 238° (from aqueous  $\text{EtOH}$ )]; as byproducts were also formed  $\text{Me}_3\text{CCH}_2\text{CHMeCH}_2\text{NMe}_2$  (XXII), b10 47-50°, n20D 1.4220, and XVI, in approx. equal parts. XXI (2 g.) and 5 g.  $\text{MeI}$  heated 2 h. at 110° gave 1.35 g. methiodide, m. 198° (decomposition) (from aqueous  $\text{EtOH}$ ). XXI (20 g.), 16 g.  $\text{MeBr}$ , and 50 mL.  $\text{EtOAc}$  containing a crystal of  $\text{NaI}$  heated 4 h. at 110° gave 18.9 g. methobromide, m. 209-10°. IIIA (68 g.) in 150 mL. 10N  $\text{MeOH-NH}_3$  hydrogenated over Raney Ni at 55 atmospheric and 120-40° gave 49%  $\text{Me}_3\text{CCH}_2\text{CHMeNH}_2$ , b. 118-21°, n20D 1.416; picrate, yellow needles, m. 181-2°. XVI (400 g.) and 235 g.  $\text{Et}_2\text{NH}$  in 200 mL.  $\text{MeOH}$  hydrogenated over Raney Ni at 50 atmospheric and 100° gave 16%  $\text{Me}_3\text{CCH}_2\text{CHMeCH}_2\text{NET}_2$  (XXIII), b10 70-1°, n20D 1.4272, Kb 10-4 [picrate, m. 96-7° (from  $\text{EtOH}$ )]; the higher-boiling material was shown to contain 7 g.  $\text{Me}_3\text{CCH}_2\text{CHMeCH(OH)NET}_2$  (XXIV), b10 90-100° (picrate, m. 104-5°). XXIII gave a methiodide, m. 101-2° (from  $\text{Me}_2\text{CO-Et}_2\text{O}$ ), and a methobromide, hygroscopic, m. 110° (from

Me<sub>2</sub>CO-EtOAc). Similarly XVI and Me<sub>2</sub>NH gave XXII, b<sub>11</sub> 53-63°, n<sub>20D</sub> 1.423; picrate, m. 105-96° (sic) (from EtOH); HCl salt, m. 167-8° (from iso-PrOH-Et<sub>2</sub>O). XXII gave a methiodide, m. 238° (decomposition) (from Me<sub>2</sub>CO-EtOAc), and a methobromide, m. 275° (decomposition) (from EtOH-EtOAc).

=> log y  
COST IN U.S. DOLLARS

	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	241.13	241.34

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE	TOTAL
	ENTRY	SESSION
CA SUBSCRIBER PRICE	-56.21	-56.21

STN INTERNATIONAL LOGOFF AT 13:41:45 ON 15 MAR 2005